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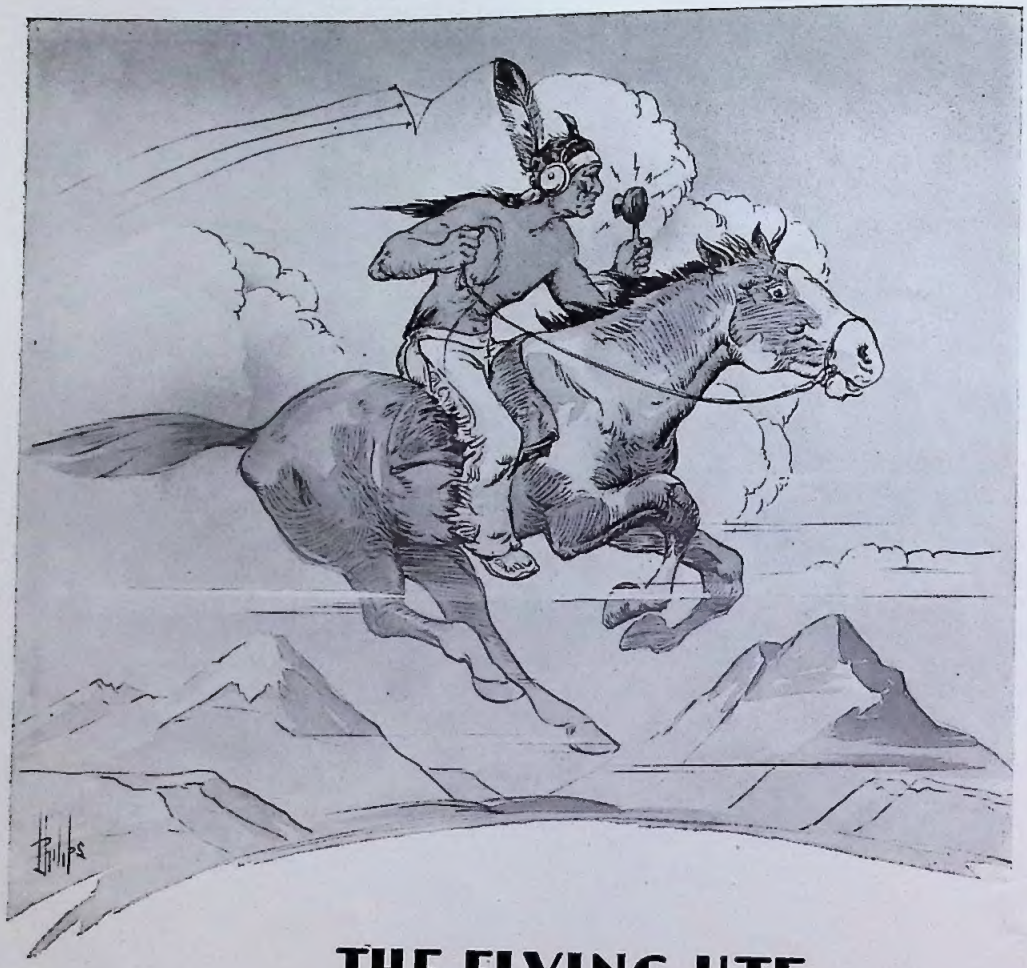
May, 1946



THE FLYING UTE
goes modern...

F. C. HOGUE
General Traffic Manager
Denver & Rio Grande Western Railroad
Rio Grande Bldg. Denver, Colorado

Rio Grande

This famous Colorado to Utah freight train is now radio-equipped for cab-to-caboose and caboose-to-wayside-station communication...for reliable faster service. *Diesel-powered, of course.*

Trains

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Volume 6, Number 7

May *1946*

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The common problem of railroad management and railroad labor is to so reduce the cost of railroad transportation that they will secure more business and mutually prosper.

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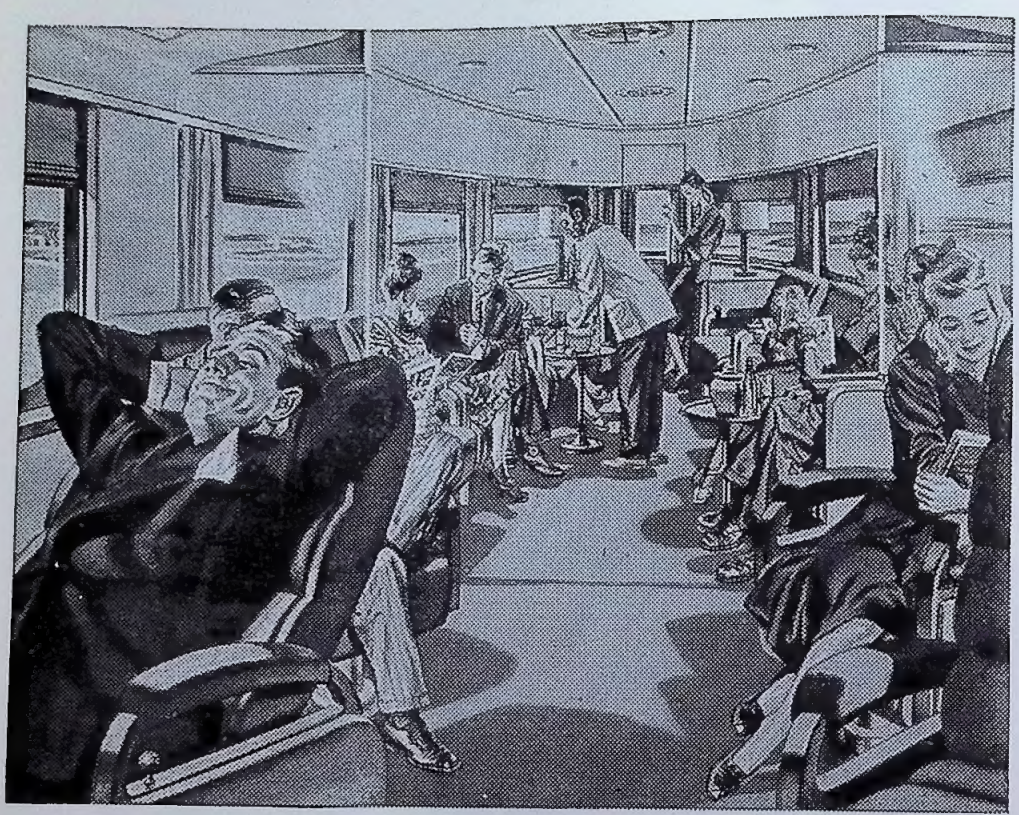


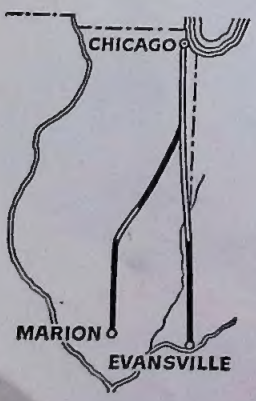
The Observation Lounge now being built for one of the new Chicago-Liners

Pullman-Standard BUILDS TWO NEW STREAMLINERS FOR *C&EI*

THE CHICAGO-LINERS

Chicago—Marion and Southern Illinois

Chicago—Danville—Terre Haute—Evansville



For de luxe, fast service between Chicago and Southern Illinois and Indiana terminals, the C&EI will soon introduce its *CHICAGO-LINERS*—two of the latest type Pullman-Standard-built trains.

The luxurious observation-lounge, shown above, together with the roomy diner with diagonal seating, are scheduled to make up the new Evansville train. The Southern Illinois train will feature the hospitable grill room. Both trains will feature modern, smoother riding coaches, with reclining chairs, and a host of the latest refinements, for the comfort and convenience of our Midwestern travelers.

The C&EI—*The Chicago Line* is the fast, direct route between Chicago-Southern Illinois and Indiana points; Chicago-St. Louis; and Chicago-Florida-Southeast *via the Dixie Route.*

CHICAGO & EASTERN ILLINOIS Railroad

The Chicago Line

Comes the Streamlined Dawn

The war is practically over as far as the railroad passenger is concerned. Quite suddenly the heavy load of troop return has lifted and empty seats, even empty double seats, have begun to appear in the coaches. Sleeping car reservations can now be had, in many cases, on evening of departure, and the traveler no longer asks hopefully for "anything." He asks for a lower or a roomette or a bedroom and usually gets it. Dining car stewards again have time to ask if "everything's all right" and in a few instances the extinct finger bowl has been resurrected.

Now that the pressure is off, railroads are losing no time in instituting long-planned schedule improvements. New equipment will take longer, but it is beginning to appear in limited quantities. Clearly the railroads are out to maintain or increase their share of the nation's passenger business. Even defeatist passenger traffic managers were shaken out of their lethargy by wartime results which proved that with enough volume passenger trains could earn good money. The problem now is to maintain profitable volume under peacetime competitive conditions.

A recent Gallup poll showed that the majority of Americans prefer trains to planes, most of them because "trains are safer" or because they "enjoy the scenery." Stephen Early, now vice-president of Pullman, Inc., expressed confidence in railroad ability to keep ahead of passenger competitors, and neatly lined up the reasons: Railroad superiority in safety, unquestioned dependability in good weather and bad, variety and luxury in accommodations at moderate prices, opportunity for relaxation and recreation, and the advantage of traveling during sleeping hours. The only shortcoming that might be charged to the rails, according to Early, is their hesitancy about advertising these advantages on a scale proportionate to promotion of rival forms of transportation.

But recently actions have spoken louder than advertising.

Most auspicious action was the rolling out of a new and gargantuan crimson and gray carpet for passengers boarding the *Twentieth Century Limited* in Grand Central Terminal. The new strip, larger than ever before, revives a prewar luxury practice which started in 1922 and signalizes the return of the *Century* from a wartime utility to its place as one of the nation's premier name trains. Furthermore on April 28 the *Century* and its Pennsylvania Railroad opposite number, the *Broadway Limited*, cut back to 16 hours as the fastest New York-Chicago running time.

In spite of the fact that B&O had lead the way with eastern schedule speed-ups some months before, it was the speed-up of the *Century*, the *Broadway* and other NYC and PRR New York-Chicago trains which to the eastern public best augured the new era of postwar rail travel. In many cases the new schedules not only restored but improved upon the schedules in effect prior to the government wartime request slowing the running time of long distance trains.

Most publicity-wise action was the through coast to coast Pullman service which started operating over a group of railroads March 31. Ten railroads joined to operate sleeping cars through over nine lines between New York-Washington and Los Angeles-San Francisco. Cars originate in the east on NYC, Pennsylvania and B&O, go west of Chicago on North Western-Union Pacific-Southern Pacific, Santa Fe, and Burlington-Rio Grande-Western Pacific. June 2 will see Rock Island-Southern Pacific added to the western routes.

Cars have a layover time in Chicago of two or three hours between connections, which will probably be improved somewhat June 2 when western lines change schedules of standard transcontinental trains. While there is no improvement in traveling time, the through car does offer the greater convenience of not having to pack up and transfer in Chicago. Most passengers will probably leave their belongings in the cars and use the time in Chicago to visit or shop. Railfans will stay with the cars to view the complicated switching maneuvers.

Railroad passenger men are watching the cars closely to see how the public takes to them. Volume of true coast-to-coast business is doubtful, except on one run, the *Twentieth Century-Chief* car. This always has been the favorite New York-Hollywood route of the movie stars. But for most people a coast-to-coast train journey is taken with several stopovers at various points along the way. The biggest volume of interrailroad transfer in Chicago is relatively short haul, Milwaukee-Cleveland, Des Moines-Indianapolis, St. Paul-Cincinnati. For such short hauls the coast-to-coast sleepers with their long layovers offer no improvement, even though

Filming a railroad scene for the 20th Century-Fox picture "Centennial Summer."

they go through some of the right combinations of cities. Travelers asked, "Will there ever be fast interline trains through Chicago offering good service between these relatively short haul cities to each side of the big city?"

To the general public the through cars represented a clear victory for Robert R. Young, chairman of the Chesapeake & Ohio, who had carried on an aggressive advertising campaign under such headlines as, "A hog can cross America without changing trains — but YOU can't!" It looked all too evident that Young had needled the other roads into doing something about the Chicago transfer situation. Executives of the roads running the through cars said the service was almost a reality in 1941, but was postponed by the war. Whoever was responsible now, David Crawford, president of the Pullman Company, recalled the historic fact that such services had been tried in the 1890's but did not work out satisfactorily and were discontinued.

Most intrepid action in the railroad battle for passenger business remained for the western transcontinental lines. Commencing June 2 they will not only regain wartime schedule losses but will do far better. Many prewar 56-hour "standard" coast trains will become about 48-hour. The Union Pacific coast streamliners will return not to the 39¾-hour prewar schedule but to 38¾ hours. The historic *Overland Limited* of C&NW, UP and SP, will be streamlined and speeded up 12 hours, as will also the *Golden State Limited* over the Rock Island-Southern Pacific. A new train, not yet named, will take the place of the *Los Angeles Limited* and the *Portland Rose* to bring the faster C&NW-UP schedules to Los Angeles and Portland. Rock Island will operate a new 39¾-hour triweekly streamliner between Chicago and Los Angeles in conjunction with Southern Pacific.

On the same date Wabash and Union Pacific will join to inaugurate 48-hour service between St. Louis and Pacific Coast cities via Denver. This will be done by a new streamliner to be called the *City of St. Louis*, which will be handled by Wabash between St. Louis and Kansas City, UP to Denver and on to Cheyenne where it will connect with the new *Los Angeles Limited*, *Portland Rose* and *Overland Limited*.

New Orleans will also share the speed-up on June 2 with the SP's *Sunset Limited* going on a 48-hour schedule. None of the 48-hour trains will require extra fare.

Santa Fe already has a 48-hour train between Chicago and Los Angeles, the extra fare *Chief*, but it will make a spectacular contribution to western service improvements when it places the streamliners *Super Chief* and *El Capitan* on a daily basis next fall. The daytime streamliners now operating between Chicago and Tulsa-Oklahoma City will be extended to Fort Worth, Dallas, Houston and Galveston. Schedules to the north Texas cities will be 19 hours and to south Texas 25 hours. At the same time the *Ranger* will be reequipped with lightweight stainless steel cars and Diesel locomotives and will operate on similar schedules, giving both morning and evening departures from Chicago for Texas.

In the northwest the Milwaukee Road has risen to the challenge of Great Northern's new 45-hour *Empire Builder*, now building, and will build six new sets of Diesel-powered Chicago-Seattle equipment to be run on a schedule of slightly over 40 hours. The present *Olympian* equipment will be kept in service to take care of intermediate towns along the route. New trains are also abuilding for Northern Pacific.

Already Southern Pacific has restored the *Noon Daylight* between San Francisco and Los Angeles and has speeded the *San Joaquin Daylight* and Shasta Route trains *Beaver* and *Cascade*. The *Cascade* is again all-Pullman and the *Beaver* is again a feature economy train. Hardly any other schedules on the road have escaped the general improvement, which is only a beginning of what will be done as new equipment becomes available.

In the middle of the country Burlington and Union Pacific-C&NW put their Denver-Chicago streamliners, the *Denver Zephyr* and the *City of Denver* respectively, back on prewar 16-hour westbound and 15 hour 35 minute eastbound schedules. Rock Island announced plans for a fast daytime *Rocket* between Chicago and Omaha and orders for additional all-room sleeping cars for the *Twin Star Rocket* between Twin Cities, Kansas City, Fort Worth, Dallas, and Houston.

But the action on the railroad front is not by any means confined to through service or even to the roads mentioned. Every new issue of the *Official Guide* has so many changes and announcements it is impossible to catalogue them here. And the press releases record dozens of changes in addition to mere speeding of running time. Pere Marquette is pepping up its dining car decor with waitresses. Pennsylvania Railroad has not only speeded up the *Broadway* but also its Chicago-Louisville and other medium distance runs. Illinois Central has installed new ventilators to clear the air in commuter smoking cars. Kansas City Southern has ordered eight new roomette-bedroom sleeping cars of latest type.

Chesapeake & Ohio is planning more new and original features in its Cincinnati-Washington streamliners than have ever before been built into new equipment. They include a moving picture theater, a dining system that will eliminate waiting for meals, art and industrial exhibits, news ticker, travelogue and library services, curved aisles for smooth passage through the train, spacious lounge area in each coach, facilities for

The first Fairbanks, Morse & Company 6000 horsepower dual service Diesel on a test run into Los Angeles on UP.

care and entertainment of children, and telephone service for passengers while the train is in motion. In the other direction from Cincinnati, Louisville & Nashville will place a new fast train in service to New Orleans sometime this summer. It will leave Cincinnati around noon with early morning arrival in New Orleans. This is in addition to the already announced St. Louis-Atlanta streamliners of the road. All the new rolling stock will be lightweight of strong aluminum alloys.

In New England the new Haven has added two trains each way to its daytime every-hour-on-the-hour New York - Boston service. These are at 7 a. m. and 8 p. m. from each terminal, extending the service between these hours. In the southwest Missouri Pacific announces an agreement with the National of Mexico to extend joint postwar streamlined service to Mexico City, 45 hours from St. Louis and 42½ hours from Memphis. The Mexican train will be called the *Aztec Eagle*.

It looks very much as if the experienced railroad traveler will soon have to become reacquainted with the passenger service map of the United States.

Rail Wages Upped 16c

An arbitration board award of a 16 cent an hour wage increase retroactive to January 1 settled the wage issue in recent Brotherhood demands for changes in wages and working rules. The rule changes are being considered separately. Leaders of some of the Brotherhoods have indicated that, although they agreed to accept arbitration, they will not consider the award binding for any longer than it takes to file demands for an additional increase.

Meanwhile the increase, combined with a falling off of wartime traffic, is beginning to make itself felt on railroad financial statements. Baltimore & Ohio had a net income of nearly $16 million in 1945. For the first quarter of 1946 it will lose nearly $13 million. The I.C.C. Bureau of Transport Economics and Statistics has adjusted past annual pay rolls to the new basis, which with past wartime increases makes present railroad pay 49.2 per cent above 1939, and finds that railroads will need 22.1 per cent increase in annual revenues above normal 1939 to offset the wage increases alone.

Since railroad freight rates have not been increased and passenger fares must go down, if anything, a substantial boost in freight charges must be made if the railroads are not to drastically curtail service. A petition for a 25 per cent increase was submitted to the I.C.C. promptly after the arbitration awards.

The last substantial and general increase in railroad freight rates was in 1921, when the same pattern of wage increase and price inflation occurred after World War I. Since that time the railroad rate trend has been consistently downward until the average level is now about two-thirds that of 1921.

Some reason for employee action on wages began to appear with the publication of results of a railroad employee opinion survey made by *Railway Age*. Progressive labor unions have held it axiomatic that wage increases should bear some relation to what a company can pay, and that a company should be left with enough to lay aside reserves for improved machinery to make future wage increases possible. But 36 per cent of railroad employees have no idea what rate of profit the railroads make; 34 per cent think the railroads make 25 per cent or more; only 4 per cent think the railroads make 5 per cent or less. Actually the I.C.C. shows the earnings on railroad property investment in war-rich 1944 as 4.18 per cent.

Railroad Reading Matter

The March issue of *Railroad Magazine* contains the annual speed survey, a complete and accurate compilation of all trains scheduled at more than 60 miles an hour start to stop. . . . The May issue, first number of the new *Travel and Camera*, will feature "Why I Like Railroads," by Don Herold. . . . *Architectural Forum* for February featured an illustrated review of 19th century train sheds, with dia-

Walter Thrall Sr., 6451 Southside Dr., Los Angeles 22, Calif.

Official Information Bureau of Switzerland.

One of three new lightweight electric trains on the Swiss Lotschberg Railway.

grams and old prints tracing the history of the train shed as functional architecture. . . . Railroadians of America have published a booklet, *Railroad Historical Research*, which will be of value to anyone planning to do research or writing in the field. Copies and information can be had from the secretary of the organization, N. G. Bergenholtz, 1416 Munn Avenue, Hillside, N. J. . . . A new Lucius Beebe book, *Mixed Train Daily*, devoted to short line railroads, will be published in the fall of 1947 by E. P. Dutton, New York. It will include photos by Beebe and Charles Clegg and six oil paintings by Howard Fogg, staff artist of American Locomotive Company. . . . G. A. Kelly, vice-president of Pullman Company, Chicago 3, Ill., will be glad to send the folder *Pullman Progress* free of charge to TRAINS readers. Representative cars from Old No. 9 of 1859 to the present duplex roomette are illustrated in color with interior diagrams. The folder makes a colorful wall decoration.

Heavy Track Improvements Will Speed Streamliners

Modern high-speed trains can't be sent willy-nilly over any kind of railroad. As I.C.C. Commissioner William J. Patterson warns, streamliners present a safety problem unless operated on a solid track system with an adequate signal system geared to the faster train movement.

So along with the tremendous investment in new locomotives and cars goes an even greater investment, on many roads, in track and signaling. Atlantic Coast Line, for instance, has started a program which will make its main line between Richmond, Va., and Jacksonville, Fla., into a natural speedway. The road calls the program the largest track and roadbed rehabilitation program in the country.

The ACL main line is a natural for high-speed operation. Except in terminals, 93.4 per cent of the route is straight track. Only .2 per cent has curvature over 3 degrees, only 2.22 per cent curvature over one degree. Little or no curve reduction work is needed on this kind of line, but to allow the speed indicated by the lack of curvature, heavier rail is being laid, ballast replaced, and ties renewed. Signaling is also being brought up to best modern standards.

NC&StL is spending $14 million to improve its main line. This will not only smooth the way for the new St. Louis-Atlanta streamliners, but will permit freight train speeds of up to 75 miles an hour. Rio Grande is placing some 140 miles of new heavy rail. Southern Pacific has finished a large program of tunnel elimination. Milwaukee Road has been widening cuts and embankments to increase stability of the line. Great Northern has finished removing many curves in the Rocky Mountains. B&O has been improving drainage ditches, clearing loose rock from walls of cuts. All across the country the work goes ahead, and in this year alone the class 1 railways estimate they will spend nearly as much for line improvement work as they will on equipment, 46.1 per cent against 53.9 per cent.

What Air Mail Profits?

Both the air lines and the post office have been doing a lot of trumpeting about recent air mail revenues. For fiscal years 1943-45 the propaganda line is that air mail has earned a profit. Basis for this statement is that air mail revenues have been more than the amount paid air lines for hauling the mail.

But doesn't it cost something to get mail to the post office, to sort it, and to deliver it? Railroads haul first-class mail for less than one-fifth of a cent a letter. If the railroads used air line account juggling railroad mail would be paying off the national debt.

So before we go off the deep end with any proposition of all first-class mail by air, we'd better realize that this would be tremendously more expensive than present handling of ordinary first class by rail with an extra charge for air mail. For most of us a reduction in regular first-class rates to the old two cents, with a premium rate for extra special letters that must go by air, would be far the better rate adjustment if the post office has too much money.

Odds and Ends

A spectacular six-alarm fire recently swept through the Wabash Terminal in Pittsburgh, imposingly tangible remnant of the Gould transcontinental plans of 40 years ago. Gould built the Wabash Pittsburgh Terminal as part of a plan to tie Western Maryland and Wheeling & Lake Erie together as the eastern end of a coast to coast system. Wabash served as kingpin of this plan, and although the Pittsburgh terminal and adjoining lines have long been Pittsburgh & West Virginia the property is known locally as Wabash and the station building, haunted by ghosts of transcontinental fliers that never used its stubby tracks, is called the Wabash Building. . . . Sun Valley, Union Pacific's winter sports and year-round vacation resort in Idaho, will be reopened to the public next winter after serving during the war as a rehabilitation center.

The bucolic East Tennessee & Western North Carolina, long a favorite with narrow gauge fans, has for the second and perhaps last time abandoned passenger service. A six-train commuter service had been operated as a wartime measure for workers at rayon mills near Elizabethton, Tenn. . . . The Pennsylvania's inductive train communication system has been placed in service over the four-track Middle Division, Harrisburg to Altoona. . . . In a referendum Toronto citizens approved a rapid transit plan including 200 PCC surface cars and two rapid transit subways.

Great Northern is installing Mars oscillating safety lights on head and rear ends of its principal passenger trains. The front light will be white when the train is running and red when it needs protection, and will swing in a figure eight. Rear light, red, will come on when the train is stopped or needs protection. . . . Newest railroad in the country is the Alexander Railroad of Taylorsville, N. C. Formerly a branch of the Southern, the 20-mile line was slated for abandonment but was sold to Alexander County which started operating it in December with a secondhand Diesel from the army and other secondhand equipment from the Southern.

Atlanta Union Station now has escalators, carrying passengers both up and down. Track level is below the concourse. . . . Southern Railway is extensively rebuilding and improving its Inman Yard in Atlanta so as to increase capacity and speed of handling. The result will be better and faster freight service for the Atlanta area. Tracks and facilities will be relocated and a hill in the vicinity of the enginehouse will be removed. A two-way loud-speaker system is being installed to allow easy communication between the yardmaster and workers in any part of the yard. . . . Railway Express Agency announces it has 200,000 miles of rail routes, 58,000 miles of air routes, 12,000 miles by steamship and 16,000 miles by motor, enough to reach 48,000 miles beyond the moon. . . . University of Illinois was given $52,000 last year for co-operative research on railroad subjects, including wheel loads, joint bars, rail webs, rail failures, welded joints, car wheels and steel brake shoes.

British Railway Notes

The London, Midland & Scottish has put into service the first 100 of 800 postwar passenger cars featuring steam heating, better hot water supply and none of the pictures and advertisements formerly posted. . . . Combination boat-train service between London and Brussels has been resumed. . . . When England was in danger of invasion railway bridges were prepared for demolition so as to deny railway communications to the enemy. Even the giant Forth and Tay bridges were mined, but the damage was fixed at that which could be made good within a week. . . . During the war maximum schedule speeds in England were restricted to 60 miles an hour, with permission to run up to 75 miles an hour to make up time. . . . The Southern Railway of England recently displayed its first postwar passenger car, a compartment coach fitted with new electrically heated foot warming panels beneath the rugs.

Britain's traveling post office service, which had been in operation for more than a century, was discontinued during the war, but now some of the runs have been restored and others will come back as soon as experienced employees are released from the services. The regal crimson sorting cars of the LMS carry the embellished legend "Royal Mail" in gold letters while the cream colored postal cars of the Great Western bear the portentous marking "Ocean Mail."

Railfan Trips

Trip over eastern terminal facilities of the Pennsylvania Railroad, including freight line to Greenville. Multiple unit cars from Jersey City Station, 10 a.m., May 26. Sponsored by Electric Railroaders' Association, 51 W. 35th Street, New York 1. . . . Two interurban trips, Hershey Transit and Conestoga Transportation, in one day, June 16. Starts from Lancaster Pennsylvania Railroad Station at 11 a.m. Also sponsored by ERA.

Locomotive Notes

The Milwaukee Road has ordered five 6000 horsepower Diesel-electric locomotives from Fairbanks, Morse & Company. . . . Santa Fe is adding a million dollar Diesel maintenance shop to its locomotive facilities at Kansas City, where the road only recently completed modernization of its steam roundhouse into what it calls the most modern roundhouse in the country. . . . The Belfast & Moosehead Lake is awaiting delivery of two 600 horsepower General Electric Diesel-electric locomotives. . . . The first of a new breed of road Diesel recently hit the rails in the Pascagoula, Miss., yards of the Ingalls Shipbuilding Corporation. It is a 1500 horsepower dual purpose locomotive which can be multipled up to four units.

War Tempo Indicator

My personal indicator of the state of the war has been the "400" fleet of the Chicago & North Western. Normally these trains are made up of lightweight cars painted bright yellow with green letterboards. But when the war got tough increased loading forced the road to lengthen the trains, using standard dark green coaches. The worse the traffic situation, the more dark green in these trains, except for the *Twin Cities* "400," which was kept all yellow at the expense of the others. But now I can officially state that the war is over. Since delivery of the North Western's 20 new coaches the "400" fleet is again all bright yellow.

A. C. Kalmbach.

L. C. McClure, 2128 Glenarm Pl., Denver, Colo.

One tunnel often frames another in the Rocky Mountain region. Here is a view between tunnels five and six on the Moffat Tunnel route. In the 49.6 miles of upward grade from Denver to the east portals of Moffat Tunnel, D&RGW and D&SL trains pass through more than a score of lesser side-hill tunnels including these.

Railroad Tunnels

More than 300 miles of American railroads run under hills, spurs and mountains through 1500 tunnels

BY STUART COVINGTON

Despite their modern aspect, tunnels have been built for hundreds of years. The first attempts at tunneling were carried out in the early centuries by the Egyptians, Greeks, Romans, Hindus and Carthaginians. The Romans, who were the greatest and most proficient of the early tunnel builders, made their bores by building great fires against rock walls of the hills which they desired to open. When the rock had been heated to its greatest possible temperature, water was thrown upon it, thus chilling it and eventually cracking it. Drilling and blasting were first conceived by Martin Weigel and, in 1632, this method was inaugurated for mining operations in the Hartz Mountains.

Construction of the world's first railroad tunnels began in 1826. No less than three such bores claim this signal honor. One was near St. Etienne, France, on the Roanne-Andrezreux line, while the others were in England on the Liverpool & Manchester Railroad. The latter two were for the use of steam locomotives, while the former was for the convenience of horse-drawn trains.

America's first railway tunnel was built on the Allegheny Portage Railroad in Pennsylvania, now a part of the Pennsylvania system. Built in 1831-1834, it was known as the Portage Tunnel. The bore is no longer in use.

Early tunnel builders were not equipped with the modern air-powered tools in present use. A few hand drills, picks and shovels, and plenty of brawn were the chief equipment of the sand hogs of the cap-stack era. Despite these overwhelming handicaps, and with the aid of but few precision instruments, the tunnelers did a remarkable job of conquering "Old Man Mountain" for the early railroads.

What the early tunnel builders lacked in equipment they made up for in brawn, ingenuity and sheer guts. What the early sand hog endured while tunneling through the granite-filled mountains would fill a volume. A bore was never completed in those early days without loss of life.

When early tunnels were being built, the only means of conveying the refuse to the tunnel mouth was two-wheeled dump carts drawn by husky mules. Today, entire trains of dump cars are used. Cars are swung in the air by hoists known as "cherry pickers."

Working conditions of the men were poor. Ventilation, light, and living quarters were extremely uncomfortable. Artificial ventilation was unknown and the only means of illumination was from pine knots stuck in the tunnel wall or from oil lanterns. Neither helped to improve the already stale air.

According to some authorities, the automatic drill was first used on Chesapeake & Ohio's Big Bend Tunnel in West Virginia. Others give the distinction to the Hoosac Tunnel on the Boston & Maine. At any rate, the new contrivance was used to some extent on the Big Bend bore.

Modern tunnel gangs work with electric lights and fresh air is pumped to them. Such modern devices as air drills, electric shovels, air hoists, and power loaders are at the disposal of modern-day builders. The biggest piece of tunnel equipment in use today is the "jumbo," or drill rack, which supports the drilling crew while at work. Carrying a full crew of approximately 20 men, the jumbo carries 13 D-505 drifters and is equipped with explosives. When blasting is about to begin it is moved back to a safe distance on its own rails, then returned to the scene of the drilling when the muck has been cleared.

Sixty to 75 holes are drilled for each tunnel blast. The holes are from 10 to 12 feet in depth and each blast advances the tunnel from eight to 10 feet, depending upon the contour of the land and the rock strata. Each blast breaks up 150 to 200 cubic feet of rock. Hardest rock for blasting is Blue Ridge greenstone and red granite.

An average tunneling cycle requires 10 hours: four hours for drilling and shooting, five hours

not as easy to subdue as are the Cascades. Three Denver & Rio Grande Western passenger trains take advantage of the shortened route, as do two D&SL passenger trains, making a total of nine passenger trains a day through the tunnel. (Two of the D&SL trains are thrice-weekly.)

Another of Colorado's well-known railroad tunnels, the Busk-Ivanhoe, is now relegated to highway service. The Colorado Midland's bore, once the pride and wonder of the West, now furnishes a route for the auto highway through the region. Running 9600 feet under the Colorado Rockies at the continental divide, its walls once resounded to the pounding exhaust of spirited Ten-Wheelers and Consolidations of the Colorado Midland, the famed "mile high" boomer pike of yesterday. The tunnel, which clipped nearly seven miles from the old route of the Midland, was 15 feet wide and had a clearance of 21 feet. Several years after the abandonment of the CM, the State of Colorado converted the structure into a highway tunnel —an inglorious end for such a magnificent example of the tunnel builders' craftsmanship.

Hagerman Tunnel was another famous bore of the old CM. Named for the line's first president, the tunnel dived through the apex of Saguache Pass, as well as through the continental divide. It was almost directly above the Busk-Ivanhoe Tunnel which replaced it. Located 18 miles from Leadville, the bore carried the line through the pass toward Glenwood Springs. This tunnel, unlike the Busk-Ivanhoe, is no longer in use, and is filled with ice during most of the year.

The Stampede Tunnel is to the Northern Pacific what the Cascade is to its neighbor, the Great Northern. Constructed through the Cascades, the Stampede is 9850 feet long. Whereas trains formerly went over the mountain and reached an altitude of 4000 feet, they now go no higher than 2700 at the tunnel's summit. In all, the track rises but 30 feet in the entire distance against nearly 2000 feet via the switchbacks which had been temporarily used until completion of the tunnel. Finished in 1888, the tunnel allowed the NP a shorter route to Tacoma. Had the NP waited until the completion of the tunnel to enter Tacoma, it would not have reached the city until after the Great Northern, an event which it could not countenance. This, therefore, necessitated the con-

Milwaukee Road.

Southern Railway.

Some tunnels like the one on the Milwaukee Road's main line at Eagle Nest, Mont., left, and the Southern Railroad's famous bore at the Cumberland River near Burnside, Ky., above, are cut into the sheer face of a cliff. Such tunnels present considerable difficulty to the contractor who drills them. Milwaukee Road scene is along their electrified lines.

struction of the switchbacks, much to the disgruntlement of the engineers of the day.

Tunnels, as well as right-of-way structures and track, suffer greatly from the fury of the elements. Not infrequently they are flooded with water, as was the case of the C&O's Seng Creek bore previously mentioned. When this occurs, the owner line may either sit back and wait for the water to recede while it does untold damage to the interior, or it may attempt to pump the water out. The latter is usually done. Though the procedure involves enormous expense, it is usually more economical than waiting for the water to recede and then repairing the damage left in its wake.

Besides high water, tunnel maintenance crews are faced with numerous assorted catastrophes which may wreak untold havoc within a short while. Most disastrous as well as most common is the cave-in. This is caused by the weakening of the tunnel roof, either from water drip or from the blasting exhausts of engines. When this occurs, the timbering or other covering of the roof cracks, letting down tons of rock and stone upon the track. Nothing can be done but assemble as large a crew as possible and begin removing the debris. As soon as the rubble has been cleared away, the engineers set to work patching up the hole in the tunnel roof and warding off any possible further cave-ins. After the work is completed and the bore pronounced safe once more, trains are again placed in operation through the tunnel. Meanwhile, traffic has been at a standstill, freight and passengers are tied up, and the operating vice-president has gone to the hospital with a nervous breakdown. Naturally, railroads try as much as possible to avoid such disasters. They regularly inspect all tunnels to see that the ceiling is safe, and take other precautionary measures as well.

The Southern's famous Rat Hole Division, extending from Danville, Ky., to Oakdale, Tenn., originally had 27 bores, eight of which were in 14 miles of track. Eleven of the original tunnels have been eliminated.

Occasionally, nature is so accommodating as

J. W. Maxwell, 7416 Pennsylvania St., Denver, Colo.

Many tunnels through the continental divide do not impress one as being much more than a secondary tunnel through a hill. This is because the divide is often reached by river valleys hundreds of miles long which bring the tracks to a high elevation. Tennessee Pass on the Denver & Rio Grande Western is such a tunnel. Even since the direct route through Moffat Tunnel was opened, D&RGW runs heavy tonnage trains daily through this pass at an elevation of 10,239 feet above the sea. Below, three of the many tunnels between Denver and the Moffat Tunnel cut through hard rock.

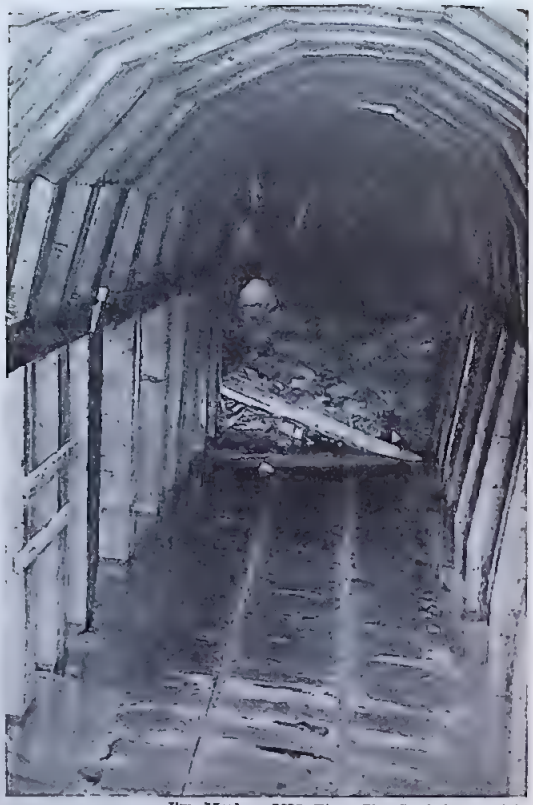
L. C. McClure.

Linn H. Westcott.

Northern Pacific.

Above, many interesting tunnels may be found on the Western Pacific in the vicinity of Keddie, Calif. At Keddie is a wye with two legs on steel trestles and the third in a tunnel. The two trestles join at a switch located in a second tunnel. The trestle in the picture above joins this second tunnel with a third. This description could go on and on, for the area is just one tunnel after a bridge after a tunnel for several miles. The inset shows the wye switch which joins the first two trestles mentioned. The left track goes to Oregon while the right is the original main line to Salt Lake City and east. Left, Homestake Tunnel on the Northern Pacific is one of the shortest continental divide tunnels. It is located only 6345 feet above sea level and passes underneath 150 feet of soft granite rock.

Freeman Blasingame, P.O. Box 917, Augusta, Ga.



Jim Morley, 2635 Etna St., Berkeley, Calif.

This Blue Ridge Tunnel, left, is not the one on the C&O but an unfinished bore that was interrupted by the Civil War before it was finished. It was to pierce the Appalachians in western South Carolina. Fills were completed almost all the way to connecting lines but rails were never laid. Right, interior of the defunct Alpine Tunnel of the Denver & South Park. At an elevation of 11,606 feet, narrow gauge trains crossed the continental divide in the country's highest tunnel.

to make natural tunnels in the United States, but in only one instance does a railroad utilize this type of bore. This is on the Southern's Bristol-Appalachian line in Virginia (Jan. '44 TRAINS), where trains pass through a natural hole in the rock.

When the strain of traffic becomes too great, or the cars and engines increase too greatly in size, a railroad occasionally finds it necessary to eliminate a tunnel. Or, in other cases, to enlarge it. If the reason for elimination is heavier traffic, the road may enlarge the tunnel from a single- to a twin-bore, thus providing itself with a double-track route through the mountain. When this is done, the tracks are usually separated from each other by a wall formed by part of the mountain itself. Occasionally, as in the Hoosac Tunnel, both tracks are housed under one tunnel, but this practice is not common.

When the cause for change-over is due to increased size of equipment, three methods are open to the railroad. The line may eliminate the bore entirely, enlarge the existing one, or cut a new one. Naturally, many factors determine the course to be followed. If the tunnel is short and the mountain above not too high, the bore will probably be replaced by an open cut. If the old tunnel is in fairly good condition, and conditions permit, it may be enlarged instead of abandoned. However, if the tunnel cannot be eliminated or rebuilt, a new one must be bored. The new tunnel is usually driven parallel to the old one, in as close proximity as possible, so as to eliminate any realignment of track not absolutely necessary. If the tunnels are very close together, the old bore may be reinforced to protect it against the effects of near-by blasting, as was the C&O's old Blue Ridge Tunnel during construction of its twin.

No experienced tunneler ever overlooks the important factor of rock strata. He hires a geologist to determine for him the exact kind

Pennsylvania Railroad.

Don Sandford, 6305 N. Francisco, Chicago, Ill.

Sectional boats carried on special cars passed through this first American railroad tunnel at Staple Bend near Johnstown, Pa. It was located at the top of an inclined plane on the Portage Railroad and was not far from the Pennsylvania Railroad main line which supplanted it. Below, two views of the abandoned Hagerman Tunnel on the first line of the Colorado Midland through the continental divide. This tunnel and its successor, the Busk-Ivanhoe used for autos no longer see railroad equipment.

Don Sandford.

of rock he will encounter, and maps his campaign accordingly. The small amount paid out to the geologist is more than repaid by the time and labor saved in later months of drilling. If the geologist shakes his head sadly and announces that the drillers will encounter a stubborn form of rock, more dynamite and more tools are brought. If he cheerfully predicts that the gang will have easy going, everyone settles back with a relieved sigh.

Interurban and trolley tunnels are so rare as to be almost unique. The most important one still in service in the United States is the Sacramento Northern's Redwood Canyon Tunnel, nearly a mile long and among the longest trolley tunnels in the country. Built in 1910, the bore is located on the SN's main line a few miles north of Oakland and boasts concrete portals.

Tunnels on narrow gauge railroads are smaller and narrower than those on standard gauge systems, but otherwise they present the same problems. Tunnel No. 2 of the East Broad Top Railway is 1150 feet long and, like the SN's No. 1, has concrete portals. Other narrow gauge tunnels east of the Mississippi are those of the 34½-mile East Tennessee & Western North Carolina in the Cumberland Mountains.

Principal narrow gauge bores on the west side of the Mississippi are on the Denver & Rio Grande Western and Denver, South Park & Pacific (Nov. '43 TRAINS). One of the most famous of all the narrow gauge bores was Alpine Tunnel on the DS&P, the contract for construction of which was let in 1880. In July, 1881, the two drilling crews met somewhere inside the continental divide, swapping chews of tobacco as was then the custom. It was not until September of the following year, however, that the bore was completed and train service begun. Abandoned long since, the tunnel was 1780 feet long, 16½ feet high and 16 feet wide. The two crews missed making a perfect joining by only 0.11 foot, and the floor levels missed by barely 11 inches.

The greatest attempt by a railroad to avoid building a tunnel was that of the Marietta & North Georgia (now Louisville & Nashville). Known as the "Hook and Eye Division," the line circles Bald Mountain near the banks of the Hiwasee River in Tennessee, then runs under itself before continuing to Atlanta. The "hook" occurs near Whitestone, Ga., where the rails form a perfect representation of the genuine article. When the M&NG was being constructed, promoters of the line didn't want to spend a lot of time and money tunneling through the rock of Bald Mountain. They therefore instructed their engineer to "do anything but go through it." The wily engineer was as good as his word when he promised not to tunnel, for he hung the rails on the edge of the mountain, then crossed them under each other to reach the banks of the Hiwasee River, his objective. Once the L&N's main line to Atlanta, this stretch of track has since become a secondary line only.

No organization except the war department, has any complete record of tunnels in the United States. The Association of American Railroads estimates that there are approximately 1500 railway tunnels now in use but the figure changes continually. This is because, due to their cost of maintenance, many tunnels are eventually opened up into simple rock cuts, while in other cases, new routes by-pass older tunnels. The aggregate length of all tunnels now in use would be enough to make one tunnel all the way from Philadelphia to Pittsburgh.

New railroad routes in ordinary rolling country are less likely to have tunnels because it is less difficult for modern earth-moving ma-

chinery to dig deep cuts in soil and soft rock. On the other hand, new routes sometimes will bore through a deep ridge when years ago they would have worked their way over the top. This is because it is no longer as time consuming to bore a long tunnel and, also, modern traffic can sometimes support a greater expense in the first cost of a railroad.

Some of the most recent tunnels built include three on the Illinois Central's Edgewood Cutoff in southern Illinois, a long tunnel on the Alaska Railroad to connect it with a new port for war purposes, the C&O's new Blue Ridge Tunnel already mentioned, and of course the great number of tunnels on the Southern Pacific at Shasta Dam, and on the Western Pacific near Keddie, Calif.

The railways have come a long way in tunnel building from the first feeble attempt by the Allegheny Portage Railroad in 1833. They may go a long way yet, but no matter what the future developments, the tunneler will always experience the same joyful pride when the last mix of concrete is shot into place and he is able to say to the roadmaster, after a final inspection, "She's all yours now — start running trains!"

Jim Morley.

Sacramento Northern's tunnel near Oakland, Calif., is one of few interurban tunnels, above. Below, construction scene and heavy freight entering Cascade Tunnel on the Great Northern near Seattle, Wash. This tunnel is America's longest, 7.9 miles, and replaces a shorter tunnel at a higher elevation. Still earlier, switchbacks took a tunnelless temporary main line over the summit.

Great Northern.

Trains' Itinerary Contests

Although tough and interminable, they were instructive and lots of fun

BY TEDD YOUNG

At 10:05 a.m. the Milwaukee Road's No. 23 pulled out of the Franklin Street station which stands in the shadows of the State capitol in Madison, Wis. Among the passengers on the eastbound train were 46 weary individuals who had participated in TRAINS' Itinerary Contest. For the past 58 days they had traveled out their itineraries which took them on visits to each of the 48 state capitals and to Washington, D. C. Madison was their last visit and No. 28 was whisking them over the last lap of their long journey. The entrants changed trains in Milwaukee, since the Madison coaches do not run through to Chicago. Here the party was joined by the judges from TRAINS magazine.

When the judges gathered the contestants together, they were astounded to find how many prize winners there were. They had never counted on more than one, so it wasn't until the train had reached Union Station in Chicago that the judges arrived at a decision as to how to make awards. As each winner stepped out on Canal Street, he received from the judges a first-place certificate, his share of the prize money, and an autographed copy of Edward Hungerford's *A Railroad for Tomorrow*.

This is the way the itinerary contest might have ended had the contestants been required to actually travel out their itineraries. However, one part of this fantasy is true: the judges were amazed and embarrassed when they checked the entries and found that 46 of the contestants had tied for first place, and they did give the awards as above-mentioned, plus another feature we'll mention later.

When the rules of the contest were announced in TRAINS there was a very favorable response. Hundreds of entries were received and the letters accompanying them signified that the contest was a complete success. The object of the contest was to make out an itinerary for a traveling representative who had to make a trip to all the state and national capitals. In each capital, the railfan was to visit the governor (or president) for at least two hours including his

First-Place Winners

Robert See Allen*
Evanston, Ill.

Roy Anderson
Hamilton, N. Y.

John E. Barrows*
Helena, Mont.

Donald P. Beaver*
Malvern, Pa.

Milan M. Brace*
Buffalo, N. Y.

Roger H. Chapin
Detroit, Mich.

Carlton H. Conrow*
Ontario, Calif.

William R. DeField
Wynnewood, Pa.

Andrew T. Dempster Jr.
Traverse City, Mich.

J. Leo Duggan
Shaker Heights, O.

Donald O. Eisele*
New York, N. Y.

C. R. Ford*
Arlington, Va.

Frank B. Fowler
Morton, Pa.

L. H. Garnar[3]*
Verona, N. Y.

Preston George*
Altus, Okla.

W. E. Hartwell Jr.*
Swampscott, Mass.

Wallace Higgins*
Hamilton, N. Y.

L. H. Homer*
North Battleford, Sask., Can.

Vane A. Jones[2]*
Hyattsville, Md.

Harold Jerome
Elizabeth, N. J.

F. W. Kohler
Chicago, Ill.

Stewart Lee Jr.
Wilmington, Del.

Richard D. Leonard*
Middleville, Mich.

Edward I. Lummus
Montclair, N. J.

Lt. J. A. MacIntosh*
Jacksonville, Fla.

Agnes W. Maier
Woodside, L. I., N. Y.

Robert D. Marsh*
South Pasadena, Calif.

J. H. McDonald
Springfield, Ill.

Lt. (jg) J. R. McFarlane
FPO, San Francisco, Calif.

John G. Meyer, M.D.
Detroit, Mich.

Eugene Osterhaus
Cincinnati, O.

George J. Patterson*
Holly, Mich.

Thorn Pendleton
Warren, O.

Howard R. Place [1]*
Vestal, N. Y.

Robert Powell*
Berkeley, Calif.

Jack P. Probst*
Dayton, O.

Guy L. Ravin*
Corvallis, Ore.

Hugh T. Smith*
South Charleston, W. Va.

Granger H. Smith*
Seymour, Ind.

Don W. Speer
Los Angeles, Calif.

Donald M. Steffee*
Brooklyn, N. Y.

Lt. J. W. Wagenseil*
Milton, Fla.

Elmer E. Webb
Chicago, Ill.

E. F. Wentworth
Englewood, N. J.

John P. Wilcox
Carlsbad, N. Mex.

Leslie D. Wilcox*
Westerville, O.

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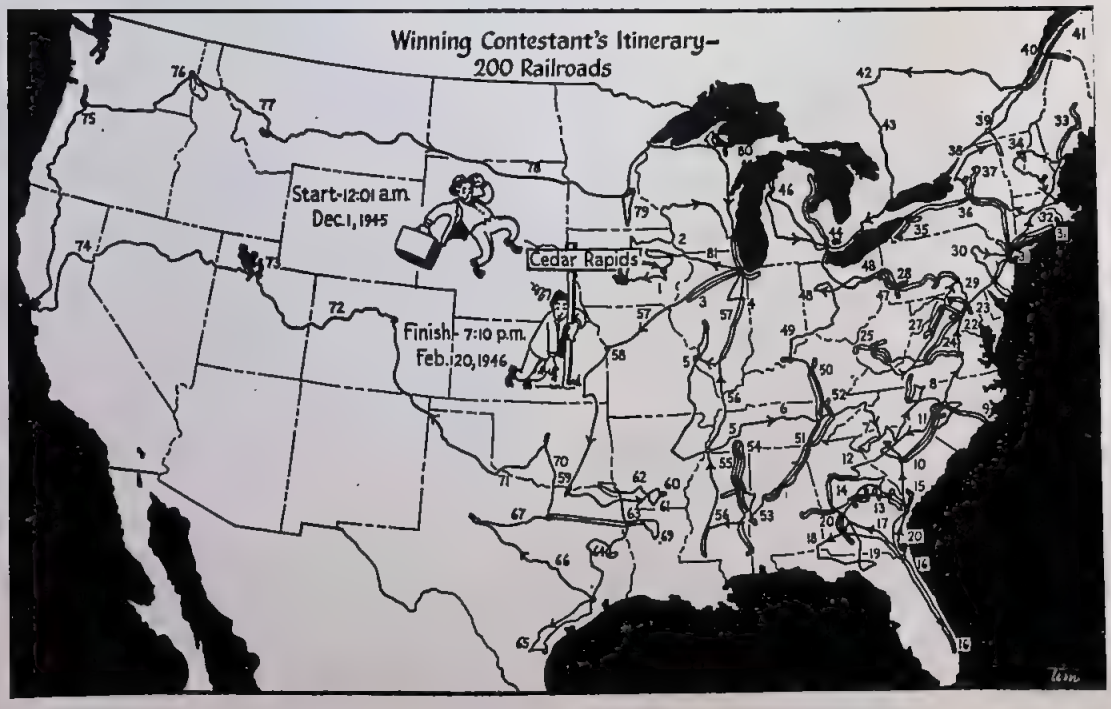
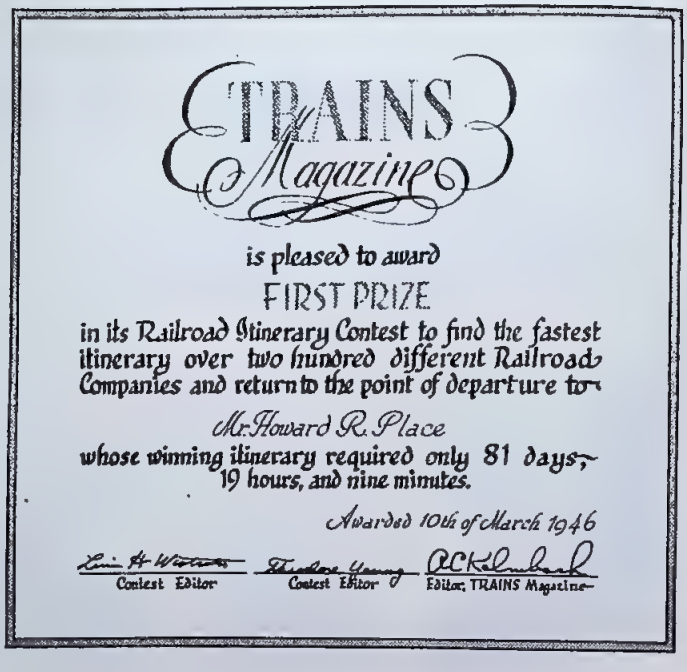
* Designates an entry in the second contest.
1 First prize winner.
2 Second prize winner.
3 Third prize winner.

On the map of Howard R. Place's itinerary to visit all of the state capitals and Washington, D. C., the numbers designate the day of the month starting with August 1. The map of the itinerary of over 200 different railroads, also as planned by Howard Place, is numbered according to each day of the trip. It shows that the east and southeast were the best qualified places to find numerous railroads without traveling too many miles.



time of transit to and from the railroad station. Visiting could not be done on Saturdays, Sundays, and legal holidays or during nonbusiness hours, but the railfan could use that time for traveling. The trip was to begin in downtown Chicago at 12:01 a.m. on August 1, 1945, and the winner was the one who returned to Chicago in the shortest time.

The large number of winners was due to the ingenuity and thoroughness of the itinerants. The judges never expected such results, and did not at first realize that there was an actual airtight system for planning the shortest possible itinerary. Each of the winners probably used some sort of plan, but winner William R. Deerfield explained eight points that describe it best:


TRAINS
Magazine
is pleased to award
FIRST PRIZE
in its Railroad Itinerary Contest to find the fastest itinerary over two hundred different Railroad Companies and return to the point of departure to
Mr. Howard R. Place
whose winning itinerary required only 81 days, 19 hours, and nine minutes.
Awarded 10th of March 1946
Contest Editor
Contest Editor
Editor, TRAINS Magazine

1. Determine if there are any cases where three visits can be made in one day. (There are none.)

2. Determine how many visits there are that can be made two in one day. (There are 16.)

3. Determine if any capitals are so situated that they cannot be reached without wasting a day. (There is one — Phoenix.)

4. Having the above information, it will be found that it would take 50 days, excepting Saturdays, Sundays, and holidays, to visit the 49 capitals. But one can double up on eight days, which narrows it down to 42 days in all, and the trip will end on Friday, September 28.

5. Determine the capital to visit on the 42nd day, from which one can return to Chicago in the shortest time. (Madison.)

6. Determine a capital that can be visited on August 1 when one cannot leave Chicago until after 12:01 that day, and list it as the first capital to be visited. (There are several.)

7. Determine the capitals that are not easily accessible and list them for visits on Monday in order to take advantage of Saturday and Sunday time for travel.

8. Determine where to fill in the rest of the capitals in any order whereby a day will not be wasted in getting to them from the next previous visit.

Those who did not follow the basic principles of Mr. Deerfield's plan arrived anywhere from a few minutes late on September 28 to several days late. The most important point proved to be the choosing of Madison as the last visit. The contestants who did make this choice won except one who could have been the 47th winner had he taken the Milwaukee Road out of Madison, but he chose the Chicago & North Western that arrived in Chicago 39 minutes too late.

There were also many who chose Springfield, Ill., as the last visit, and were 44 minutes late. Another common error which many made was visiting a capital on Labor Day or on Sundays. W. Eugene Hartwell Jr., submitted an alternate itinerary which cut a day off the winning time. In his research, he discovered that Alabama doesn't honor Labor Day. He then planned his schedule to visit in Alabama on Labor Day. Unfortunately for Mr. Hartwell this itinerary could not receive first prize because according to the contest rules Labor Day was to be considered a legal holiday and could not be a visiting day for the purpose of the contest. Mr. Hartwell did file another entry which was one of the prize winners.

Howard R. Place, another prize winner, seems to be one of the better qualified *Official Guide* readers. His itinerary was one of the best we received. Although we are citing Mr. Place's entry, there are many others who de-

Howard R. Place

Right, is one of the sheets from Howard R. Place's itinerary. On this page, 11 railroads were used in the southern section of the country. This is a typical phase of the itinerary that takes a railfan on 200 different roads.

Howard R. Place 15

MILSTEAD TO OPELIKA - Mon. Dec. 17 -39 miles
Lv. 7:22 pm. W of Ala. No. 36 Milstead
Ar. 8:32 pm. W of Ala. No. 36 Opelika (joint station)

OPELIKA TO COLUMBUS - Mon. Dec. 17 -- 28.7 miles
Lv. 8:32 pm. C of G No. 10 Opelika
Ar. 10:35 pm. C of G No. 10 Columbus, Ga.

COLUMBUS TO MACON - Mon. Dec. 17 -& Tues. Dec. 18 - 100.1 miles
Lv. 11:15 pm. C of G No. 10-4 Columbus, Ga.
Ar. 2:00 am. C of G No. 10-4 Macon

MACON TO DOTHAN - Tues. Dec. 18 - 180.4 miles
Lv. 2:45 am. C of G No. 7 Macon
Ar. 9:30 am. C of G No. 7 Dothan
Ar. 9:45 am. A&STAB Sta. - 1/4 mile transfer

DOTHAN TO COTTONDALE -Tues. Dec. 18 -30 miles
Lv. 9:45 am. A&STAB No. 1 Dothan
Ar. 10:55 am. A&STAB No. 1 Cottondale, Fla. (joint station)

COTTONDALE TO CHATTAHOOCHEE -Tues. Dec. 18 -35 miles
Lv. 11:00 am. L&N No. 3 Cottondale
Ar. 1:10 pm. L&N No. 3 Chattahoochee (joint station)
Transfer to Greensboro, Fla. 12.6 miles (3-1/4 hrs.) Arrive 4:25 pm.

GREENSBORO TO CHATTAHOOCHEE- Tues. Dec. 18 - 12.6 miles
Lv. 10:57 pm. AN No. 2 Greensboro
Ar. 11:30 pm. AN No. 2 Chattahoochee (joint station)

CHATTAHOOCHEE TO LIVE OAK- Wed. Dec. 19 - 128.6 miles
Lv. 12:40 am. SAL No. 38 Chattahoochee
Ar. 4:36 am. SAL No. 39 Live Oak (joint station)

LIVE OAK TO PERRY - Wed. Dec. 19 - 44 miles
Lv. 5:00 pm. LOP &G No. 1 Live Oak
Ar. 7:45 am. LOP & G No. 1 Perry
Ar. 8:00 am. South Ga. Sta. - 1/2 mile transfer

PERRY TO ADEL - Wed. Dec. 19 -76 miles
Lv. 8:00 am. South Ga. No. 2 Perry
Ar.11:35 am. South Ga. No. 2 Adel, Ga.
Transfer to Southern Sta. - adjacent

ADEL TO CORDELE - Ed. Dec. 19 -63.2 miles
Lv. 11:53 am. Southern No. 2 Adel, Ga.
Ar. 1:50 pm. Southern No. 2 Cordele, Ga. (joint station)

CORDELE TO ALBANY - Wed. Dec. 19 - 35.7 miles
Lv. 2:50 pm. A&N No. 4 Cordele
Ar. 4:20 pm. A&N No. 4 Albany (joint station)

ALBANY TO MOULTRIE - Wed. Dec. 19 - 39.2 miles
Lv. 4:45 pm. Ga. Northern No. 4 Albany, Ga.
Ar. 6:20 pm. Ga. Northern No. 4 Moultrie, Ga.

MOULTRIE TO ALBANY - Wed. Dec. 19 - 39.2 miles
Lv. 7:30 pm. Ga. Northern No. 3 Moultrie, Ga.
Ar. 9:00 pm. Ga. Northern No. 3 Albany, Ga. (joint station)

serve equal merit. Mr. Place's trip followed the winning plan to a tee. He doubled up on his visits in eight days, and chose Madison as his last stop. However, his was unique in one respect: he applied his plan so that it actually could be traveled with ease and comfort. There was plenty of time for sleeping, eating, and visiting, and there wasn't always a rush to make train connections. The latter advantage was due to the choice of railroads he traveled on. Rather than catch any train at the first chance, he waited several times for the crack trains. In this way he made up the time loss used for the night's rest or waiting for the faster trains. During his trip, he traveled through each section of the country only once, except in one case where he returned to Helena, Mont. If anyone would actually travel out Mr. Place's itinerary, he would find himself enjoying an interesting journey with plenty of time for visiting and comfort.

In the makeup of an itinerary, the successful contestants found that the general outline of the schedule should be planned well ahead of time. Those who start out by just figuring from one stop to the next often wasted much valuable time. Another common mistake is the choice of which train to take. Too many take the first train they can make connections with, when they should do as Howard Place did — wait for a crack train or a connection that will benefit them in the long run. There has been real value in this type of contest, as many entrants have explained. Those who have made out itineraries will be more than capable in the future of planning a trip for themselves whether it be for business or pleasure. With this sort of planning, travelers can enjoy the maximum convenience of a train every time.

The division of prize money into equal shares came out to less than $5 per winner. This seemed hardly enough for 46 winning efforts. Heads were put together and a solution for a single first prize was hatched. The prize winners were to be given an opportunity to compete in their own exclusive itinerary contest. Each was sent a copy of the December, 1945, *Guide*. The only similarity to the first contest was the means of transportation and the use of the *Official Guide*. The contestants were to plan an itinerary that would take a railfan over 200 or more different railroads and return to the initial

point of departure in the minimum elapsed time.

Much aspirin was consumed by the judges when a few loopholes were exposed in the rules. The main point of conflict was a 15 minute per mile transfer clause, but the contestants' demand for clarification was well understood when it was learned that many of them were spending as much as 200 hours on their itineraries. Only 26 survived the stupendous (no kidding) task, and in this contest there were three definite winners. Howard Place of Vestal, N. Y., was first. His time for the trip was 81 days, 19 hours, and nine minutes. Vane A. Jones finished 37 hours behind the winner, and L. Howard Garnar's entry placed him third. Mr. Place's success was due to his ability in making excellent connections between trains, and his frequent use of the fastest scheduled trains on each railroad. Here is a typical example of his close scheduling when he left Manchester, Ia.

Manchester to Oneida, Ia.	8.1 miles
Lv. 4:00 p.m. Manchester & Oneida	Manchester
Ar. 4:30 p.m. Manchester & Oneida	Oneida
Same station — no transfer.	
Oneida to Cedar Rapids, Ia.	63 miles
Lv. 4:30 p.m. Milwaukee Road	Oneida
Ar. 6:55 p.m. Milwaukee Road	Cedar Rapids

This is just one of the many instances in Mr. Place's itinerary when he caught a train immediately upon disembarking. Another interesting fact is the way he planned his schedule to save time by using such crack trains as the Milwaukee Road's *Hiawatha,* the Santa Fe's *Chief,* and the Union Pacific's *City of Los Angeles.* Mr. Place averaged 31 miles per hour while on trains and 19 miles per hour including stops. In comparison, Vane A. Jones averaged 27 miles per hour while on rails and 16 miles per hour for the trip. The average time of all the 26 entries was 102 days and one hour. The average mileage traveled by each contestant was 39,847; the average speed 15 miles per hour.

It is surprising to learn that Howard Place is a comparatively new railfan. It might be better to call him a renewed railfan, for as a youngster he was somewhat interested in the railroads in his locality and he collected time tables. However, his interest along the Iron Pike more or less waned as he grew older, until October, 1944. At that time he was stricken with infantile paralysis and it was while he was convalescing that he first became acquainted with TRAINS magazine. A friend who was visiting him brought along several copies, and Howard has been a steady TRAINS reader since that time. It was less than a year after first reading an issue of TRAINS that Howard entered the itinerary contest.

Unlike many railfans, he has never had any official connection with railroads. He has traveled on long rail trips only twice, each time to the West Coast. Mrs. Place, who did the typing on Howard's itinerary, is the only one in the family who has the distinction of having worked for the railroad, but that was only for one summer when she was employed by a ticket agent in Cazenovia, N. Y. The Places occasionally drive out to the East Syracuse New York Central's yards to watch cars being humped, but that doesn't explain where Howard developed his ability to plan out itineraries.

A word from our first prize winner warns that those who wish to travel out their itineraries be well stocked with K rations for there are many non-diner trains used along the route. He also suggests carrying aspirin for the headaches that will come up throughout the trip, and a strait jacket to slip on later.

Some other interesting facts on the contest are: Vane Jones's neat entry and helpful questions. . . . L. Howard Garnar's entry was the easiest for the judges to follow because he inserted the *Guide* page number for each log. . . . Donald Steffee traveled the most miles—60,190. . . . Donald O'Eisele, 15-year-old contestant, traveled the least miles — 29,518, and had the neatest entry. . . . Guy L. Ravin used the Southern Railway 23 times.

Richard D. Leonard nailed this epitaph on his entry, which is an expressive way to draw the Itinerary Contests to a close:

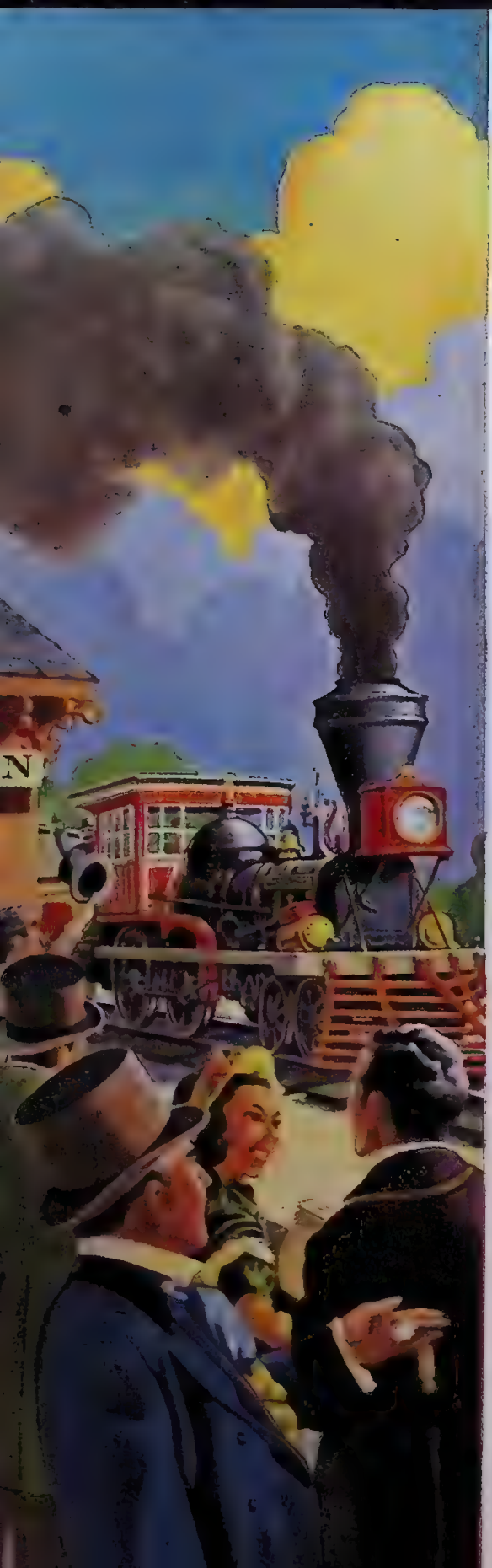
There was a poor railfan named Doddy
Who someone with the aid of some toddy
Got to make a long trip,
Two hundred roads at a clip,
All that got back was the body.

Photo-Story Contest

Next month we shall announce the details of a contest for groups of railroad photographs that tell a story. Selections like the PE freight pictures starting on page 40, or a group all taken at the same place, or a series of interesting track patterns are typical examples of eligible entries.

Switching Crew

This Atlantic Coast Line Diesel switcher is in service at Wilmington, N. C., one of the important seaports along the southeastern coast. This picture and our front cover were both taken by itinerant rail-photographer Gladys Relyea. Many of her pictures are of railroad employees at work. She started out with photos of railroads in Utah and Nebraska, then swung to the southland, augmenting her black and white work with some fine kodachromes such as these. The man guarding a grade crossing in Wilmington on the front cover is Peter White, an ACL flagman.



CHECKS that have come every year for 100 years

SINCE its founding 100 years ago, the Pennsylvania Railroad has paid to its employees, stockholders and bondholders approximately twelve and a half billion dollars.

Never once over that century has it failed to meet a financial obligation when due.

To its employees the Pennsylvania has paid in wages a sum exceeding ten billion dollars.

To stockholders, it has paid a cash return in every year since 1847—a total of a billion and a quarter dollars.

To bondholders—individuals, and insurance companies, savings banks, trust companies, representing the savings of many millions of individuals—it has paid in interest more than a billion dollars.

From the beginning, the Pennsylvania has been a railroad built by the people for the people. The money to construct it as the shortest route between East and West came from people of all walks of life in the form of subscriptions to shares of $50 each, payable in ten $5 installments. Today, with 13,167,754 shares outstanding, the average holding is only 61¼ shares, and of the 214,995 stockholders of the railroad 106,139—or more than 49%—are women.

Thus, not only has the Pennsylvania Railroad served the American people through continually improving transportation at low cost—but through wages, dividends and interest (plus huge purchases of materials in the area served)—it has contributed vitally to the prosperity of communities and to the welfare and economic security of many thousands of American citizens.

PENNSYLVANIA RAILROAD

1846 1946

ONE HUNDRED YEARS OF TRANSPORTATION PROGRESS

000
PENNSYLVANIA

Colorado River Bridge at Topock

ARTIST, JOHN M. SITTON

One of the major mainline railroad improvements made by United States railroads during the past year was the new Santa Fe bridge across the Colorado River between Topock, Ariz., and Needles, Calif. John Sitton's painting for Bendix Radio, one of a collection of railroad water colors, shows the new bridge in the background, the old Santa Fe bridge end on toward the right, and a highway bridge at far right. The new Santa Fe bridge is a multiple-span deck truss while the old bridge, now used for highway purposes, is a cantilever. The job also involved new approach lines with easier grades and curvature. The new line and bridge have been located at a higher elevation so as to eliminate any danger from flood stages, which sometimes washed out portions of the old approaches.

Bendix and Railroad Radio Communication

An exhibition of railroad landscapes in water colors by John M. Sitton, at the Grand Central Art Galleries, New York City, was sponsored by the Radio Division of Bendix Aviation Corporation. In the foreword of an illustrated brochure introducing the 26 paintings, Ernest R. Breech, president of Bendix Aviation Corporation, wrote, "For more than a century, in war and in peace, America's railroads have symbolized the growth and progress of a mighty nation. Today, at the successful conclusion of one of the most stupendous undertakings in transportation history, the railroads are still pioneering. They are looking ahead with foresight and confidence to new standards of efficient operation and service.

"In tribute to the achievements of a great industry, Bendix Radio Division has commissioned John M. Sitton to portray in water color the countryside through which railroad radio tests have been made. We hope these railroad landscape paintings will serve to heighten appreciation of the enduring contribution made by the railroads toward the growth of the nation.

"For the past year, Bendix Radio Division of Bendix Aviation Corporation has been privileged to co-operate with many of the railroads of the United States in bringing to perfection a highly dependable new form of railroad communication—very high frequency space radiotelephone. This new tool for an industry rich in tradition, instantly links train crews with one another and with wayside stations."

Very high frequency radio, which was used with dramatic effectiveness by the military services to maintain two-way communications between land and air forces, now provides a dependable railroad communications system which is free from atmospheric or man-made static, does not require wayside wires, and eliminates dead spots in congested areas.

Utilizing radio frequencies of above 150 megacycles, the Bendix Radio systems provide dependable radio communication for use in yards, terminals, and in end-to-end, train-to-train, and wayside-to-train operations. These systems have already undergone 350,000 miles of actual test performance.

Because very high frequency goes no farther than the horizon, it can be controlled to cover only a small area without interfering with other radio or telegraph services.

Unlike lower frequencies such as those used for radio reception in the home, very high frequency signals are reflected from solid objects as light is from a mirror. With this bouncing characteristic, very high frequency effectively goes around large buildings, under or over bridges or trestles, and fills congested areas with a strong signal.

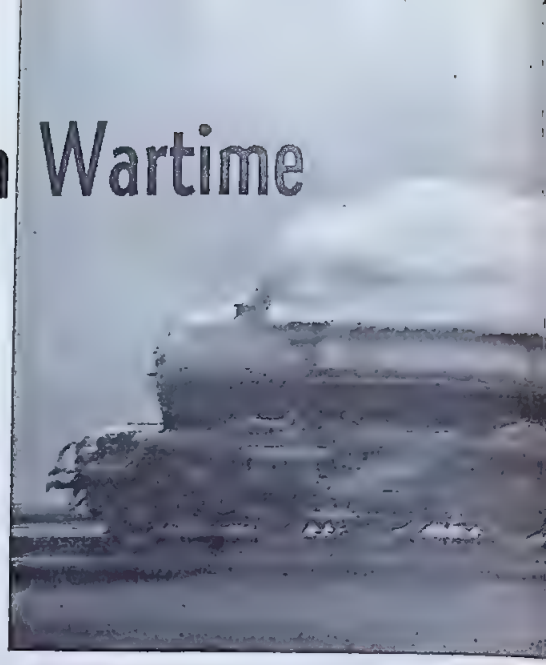
British Railways in Wartime

Thirty billion passenger miles a year were handled by England's concentrated rail systems

BY WAYNE LEEMAN

The first postwar report on British railways shows that the great military crush which saw 620 special trains run in 16 days for troops evacuated from Dunkirk alone is subsiding, that great plans are already under way to replace blitzed locomotives and rolling stock, and that more and more GI's are leaving for the United States after riding British trains, most of them with the impression that railroading still is different in Great Britain.

In that connection, some wag once said that British trains are pulled by locomotives, the cars have wheels, and there the similarity to things American ends. That's a gross exaggeration, of course, but there are plenty of differences.



The Princess Elizabeth is shown in Westmoreland, England, taking on water from a track trough prior to ascending Shap Summit, where the rise is one in 75, during the 400 mile London to Glasgow run. Below, a shunter (switchman) hooks the chain preparatory to swinging it up and over hook at right. Cars are pressed together when this is done. Normally buffer expansion keeps chain taut while running or standing. This man's job earns him about $20 a week.

Freight cars, known as goods wagons, are small to the toy size. About 95 per cent of them have only four wheels and there are no automatic couplings. Cars are link coupled either by a three-link chain or by a double-link with screw tightener in the middle. The latter type is used on passenger equipment.

All freight and passenger cars still have buffers to minimize coupling shock. On passenger trains the "give" in the buffers provides the slack to facilitate starting a heavy train.

Coal cars, except for a few minor exceptions, are of 10-ton capacity and are not equipped with mechanical brakes; nor can the hand brakes be operated while the train is in motion. Only braking power is from the engine and the one hand brake on the guard's car. Speed of solid coal trains is restricted for this reason. High-speed goods trains are required to have a certain number of wagons with vacuum brakes.

American servicemen found the English method of switching cars of as much novelty, and as different, as any operation in England. Switchmen are known as shunters. Their tool of trade is a shunter's pole about five feet long with a hook at the end of it. With this pole they run along the side of the wagons, unhooking the link chains to enable the wagons to be kicked by the shunting locomotive.

Wartime conditions have resulted in no further consolidations of English railways. They are still four in number, the result of the amalgamation on January 1, 1923, of 123 separate railway companies, and they are the Great Western Railway, the London, Midland & Scottish Railway, the London & North Eastern Railway, and the Southern Railway.

Because coal is plentiful in England and fuel oil is not, Diesels are still not popular nor in much use. The Big Four own and operate 28 Diesels, in contrast to 19,627 steam locomotives.

Probably many an American soldier noticed at one time or another that there's none of the saga of locomotive crews picking up orders on the fly in England. Written train orders aren't used. Trains are controlled from signal towers known as signal boxes, of which there are 10,358. The signalman, relying on an indicator mechanism that shows clear or occupied blocks, not only operates switch levers but semaphore signals as well. In case of doubt he gets instructions from a group control office.

Railroad employees only recently have obtained general wage increases, but even so the scales are lower in England than in America. Pay for four classes of employees now runs as follows: shunter, 99 shillings 6 pence or about $20 per week; signalman, from 88s 6d to 113s 6d or roughly, $18 to $24 per week; fireman, 93s 6d to 107s 6d or $19 to $22; and driver, 113s to 126s 6d or $23 to $25. (American troops are paid on the basis of one pound equaling $4.03.) Payments with overtime and certain additions increase the amounts to some extent.

American military personnel, except for short journeys, didn't have to obtain tickets to ride

Switching operations, called shunting in England, are shown at Paddington Station. Left, above, shunter, holding pole under coupler link, signals for backing up. Right, he puts pressure on his pole waiting for coupling chain to be released.

(a process known as "booking" in England). Instead, soldiers obtained travel vouchers from an RTO (Regional Transportation Office) of the Army Transportation Corps without charge, the cost being assessed against reverse lend lease.

Coach travel still is divided into first and third classes. Limited numbers of sleeping cars on the few long runs are reserved for priority passengers. Tickets are inspected during the trip, but seldom collected until the trip is ended when they are surrendered to a collector on the station platform.

Most passenger cars are divided into compartments. A first class compartment generally has six seats, three on each side, so that you end up facing someone if the compartment is full. A car usually has nine compartments, with the aisle down one side of the car in the case of such an arrangement.

In 1943 the mainline roads knocked off the fabulous total of 32 billion passenger miles (meaning number of passengers multiplied by the number of miles traveled) and that meant plenty of crowding on occasion. Peace meant no improvement, either, for during the Bank Holidays this year trains to the west country were so crowded that the press cited instances where people couldn't get out of compartments —they were that jammed—and were carried by their express train as far as 300 miles to

Below left, a typical tank shunting locomotive has just picked up another string of goods wagons, and shunters are checking destinations. Right, the shunters' work takes them all over a large yard, so this car is supplied to carry them.

Backing locomotive quickly compresses plunger-mounted buffers, allowing link to be pried off hook. Left, above, coupling chain has just been released, and buffers are expanding. Right, above, shunter leaves the coupled wagons.

the next stop. Whether such passengers had to pay for the extra ride wasn't mentioned.

Many an American has found himself in a compartment designed for six in which he could count 16: eight seated and eight standing. On the long runs from London to Edinburgh and Glasgow (about 400 miles) it is necessary today to be at the station when the equipment is set in to get a seat.

Only three American railroads now have representatives in London: Missouri Pacific Lines, Pennsylvania, and Illinois Central. Mr. E. J. Bray, European traffic manager for the Missouri Pacific, is a spry man in his 70's still riding the pulses of all European commerce while funneling a fair share of it to Mo. Pac.

Dining car service went out with the war and is just being resumed. Mechanical stokers are not used, making it rather rough on the firemen on the long runs to Scotland where even today nonstop runs of two and three hundred miles are common. Locomotives on these runs make use of some of the 141 watering troughs on the "Big Four" to replenish their supply. Standard size of an operating crew on both freight and passenger trains is three men: fireman, driver, and guard.

Since September 1, 1939, the four lines have been under government control. Under terms of the agreement, 43,000,000 pounds (roughly $172 million) of net profit was earmarked for the railways' 848,000 stockholders—if the lines made that much—with all profit over that sum to go to the government. The expectation at the time was the government might get as much as one million pounds. But note what the government actually got: 1941, £21,656,000; 1942, £45,657,000; 1943, £62,099,000; and 1944, £46,787,000.

The government, and all Britain, got consid-

A girl employed by the London & North Eastern Railway couples an air hose after shunting is completed. Air hose and screw-type coupler are used on passenger equipment.

erably more in services from the railroads. At one period of the war years, 20,000 staff members of 35 railway and London Transport shops were engaged in production of war materiel. Their astonishing range and versatility produced, for example, aircraft, tanks, bridges, artillery, radio and radar, trucks, bombs and shells, invasion craft, and submarine parts. Work went on everywhere, even in unused portions of subway tubes. And all this was a side line to the regular work.

The four mainline roads don't issue individual timetables. Instead, the ABC Guide, issued monthly, gives schedules to and from London on all roads from all stations. A similar guide does the same thing for intercity traffic other than to London. A train headed toward London is always considered an up-train, and away from London, a down-train, regardless of direction.

One of the newest types of engines in service is the Merchant Navy class of the Southern Railroad. This road, incidentally, paints its equipment green, just as does the road of the same name in the United States. This engine

Britishers learned in wartime to queue up for everything. Here orderly lines in Southern Railway's Waterloo Station wait for trains. This 24½ acre station, Britain's largest, shows no trace of severe damage it suffered during war. Center, left, a tryout is given a railroad fire engine devised for use in the blitz; it is built of pumping apparatus mounted on a small goods locomotive. Corner photo was taken a few minutes after "all clear" had sounded in Middlesbrough Station of L&NE. This was common sight in England both during blitz of 1941 and robomb attacks of 1944-45. At height of blitz, British lines maintained superb service by constant repair and maintenance. Below, more than 100 American locomotives waiting in England for transport to continent in invasion. Right, a signalman at a branch junction holds a staff to be picked up by a passing crew who will turn it in at next signal box; signalman there will then know block has been cleared. Note switch and signal mechanism. Most railroad lines are double track in England so this scene is rare.

Track circuit, train-actuated signal systems are in much less use in England than in America. Written train orders are not used; in Great Britain the task of train regulation falls primarily to towermen in signal towers known as "signal boxes," of which at left is shown a typical one of the 10,358 on mainline roads and London Transport. The leverman here at Swansea is studying his box indicators which register whether the block ahead is clear or occupied. He sets switches and signals accordingly. Rate of pay for such a job is based on number of levers and whether they are hand or power operated. Base pay is about $19 a week. Lower, left, a view of a signal bridge or gantry in a yard as seen from the driver's side of an engine of the Great Western Railway.

is a 4-6-2, has a boiler pressure of 280 pounds, weighs 142 tons, and has a tractive effort of 37,500 pounds. Tractive efforts of express passenger locomotives range from 37,500 to 43,462 pounds on the four lines.

Probably the explanation for most of the major differences in railroading between England and America can be attributed still to the fact that England is a "tight little island." The four mainline railroads serving England, Wales, and Scotland finger through an area of 88,745 square miles containing 46,466,700 people with a route mileage of 19,132. In other words, 19,132 route miles of four companies serve 46,466,700 people. The contrast with the United States becomes impressive when it is realized that the English area is not much larger than Kansas' 82,276 square miles where only 1,801,028 people reside. And that route mileage takes on significance when compared to the Santa Fe's 13,115.

Anyway, regardless of the cause, the differences are there. And because of the war, hundreds of thousands of Americans now know much more about them, if only in a vague sort of way.

These Diesel shunting engines are some of the total of 28 such shunting Diesels in England. Pictured at Leeds, England, they are here being cleaned prior to their final tests in the yards of the LMS Railway. These locomotives weigh 30 tons, develop a maximum 200 horsepower, and can haul up to 700 tons. Scarcity of fuel oil limits their use.

Frank J. Peterson, 1784 S. New Hampshire Ave., Los Angeles, Calif.

PE Freight Run

Diesel, steam, and electric power co-operate to move heavy freight over Pacific Electric's main line

BY WILLIAM BARHAM

PE Freight Conductor

Pacific Electric's Northern Division might aptly be nicknamed the "Safety Valve Division."

It has truly been a safety valve for the overburdened Southern Pacific, whose single-tracked line from the east into Los Angeles was sorely taxed by the tremendous amount of war material it carried.

The Northern Division trackage extends 58 miles east from Los Angeles to San Bernardino and from there short lines radiate north to Arrowhead Hot Springs, northeast to Patton and Highland, east to Sunkist, and southwest through Colton to Corona.

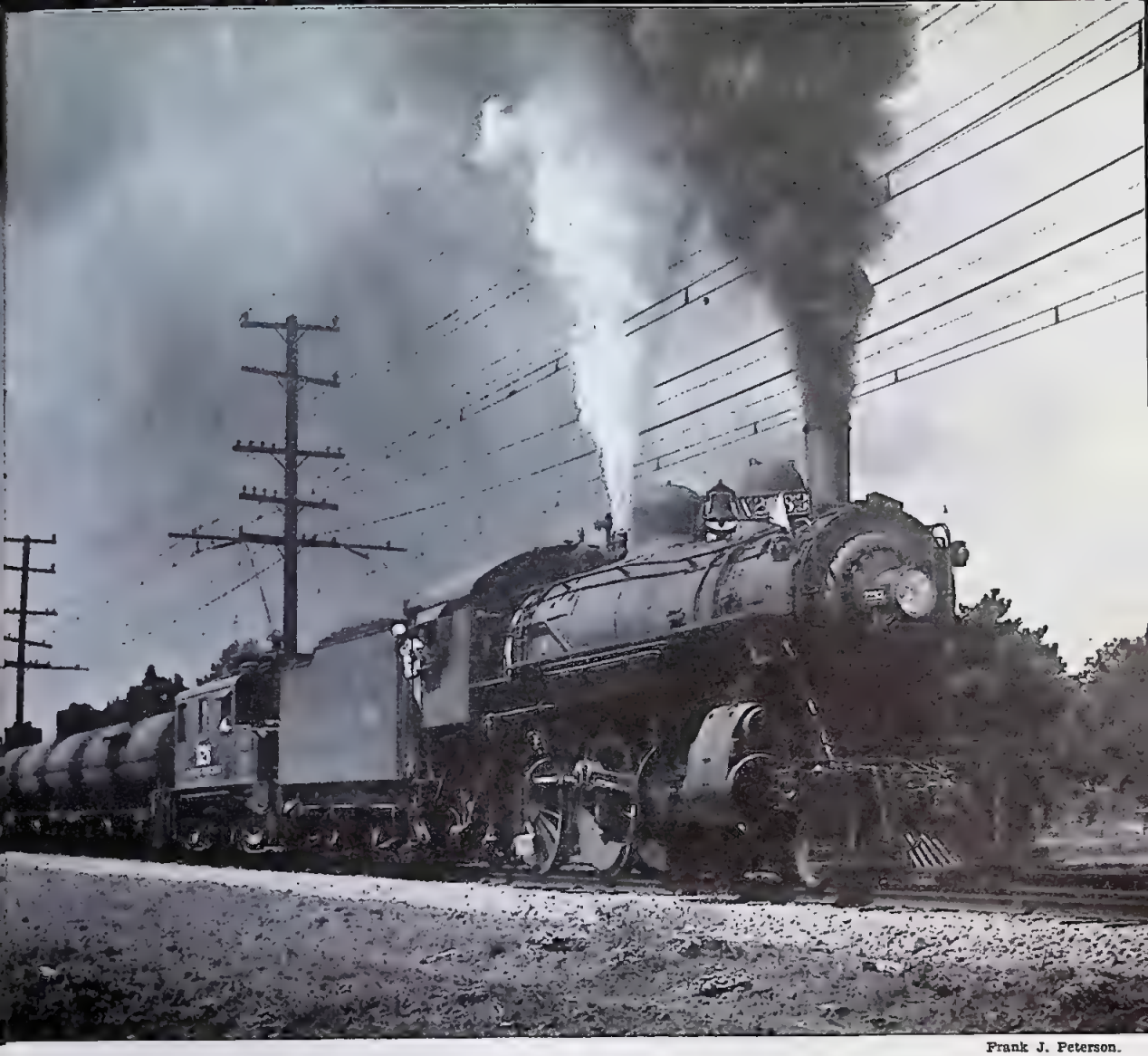
In years past, sleek red, heavyweight high-speed interurban trains scorched the rails from Los Angeles to San Bernardino, and at one time the trip could be made in one hour and thirty-two minutes! Fast? Yes, when one considers that today the Santa Fe *Super Chief* consumes one hour thirty-five minutes westbound, and one hour forty-five minutes eastbound in its jaunt between the same two cities. But today the big red cars run only as far east as Covina, about a third of the way. The remainder of the old main line has "gone freight."

When wartime traffic became too heavy for efficient operation, SP diverted more and more westbound freight to the PE at Colton with the result that the Northern Division became a second main line for the parent system.

Faced with this huge increase in business, and not being able to buy more locomotives, the PE decided to use steam motive power leased from the larger road. In a short time it became common practice to double-head steam and electric engines, and occasionally steam and Diesel power. Southern California railfans were sometimes seen with protruding eyes getting their first unbelieving glimpse of a wartime "PE" freight. Soon, however, it became rare to see a train hauled solely by a juice hog. To the growl of electric motors and the rumble of the company's Diesel engines was added the sharp exhaust bark of a tiny Mogul, or the full-throated roar of a Mallet. As if excited by new conquests, the mighty steam locomotives triumphantly wrote great patterns of black smoke into the sky over the steeper grades, telling one and all that "something new had been added." Thus the electric-steam-liner, to coin a phrase for the purpose, was born.

New problems arose with the advent of steam power, problems which were quickly and efficiently solved. At one place on the line, the electric road's trackage ran down the main street of the city of Covina, and the approach from the west was on a three per cent grade. Steam locomotives, working hard at climbing the hill, emitted such explosive blasts from their stacks as to crack windows in homes along the tree-lined avenue.

Soon, it was decided to use the SP's Covina Branch which skirted



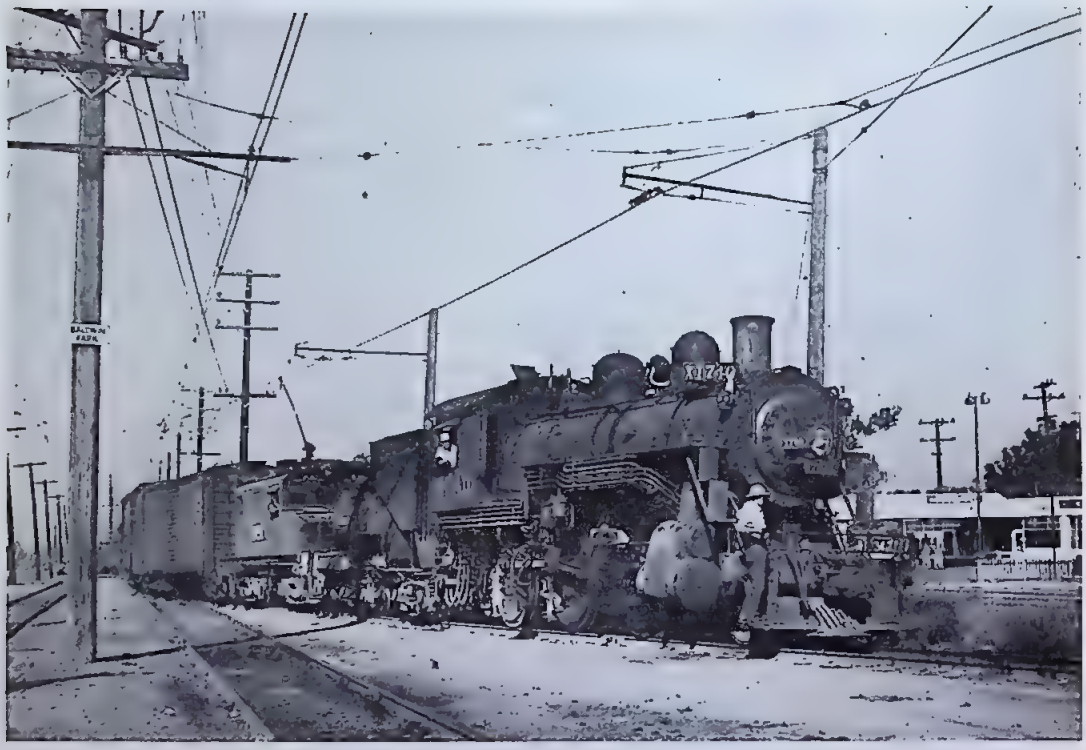
Frank J. Peterson.

Far left, switcher 1713 assembles trains in PE's State Street yard in Los Angeles ready for the treck to San Bernardino. Most trains carry all or many tank cars as did Extra SP 2286 East shown running through Alhambra.

the north side of the town, away from the residential section. PE redball freights would run on SP tracks between Baldwin Park and Lone Hill, a distance of 10 miles. Since there was no overhead wire between Irwindale and Lone Hill, trolleys were tied down and the powerful 1600 class motors rested while being hauled over the line by their new working companions, the steam engines.

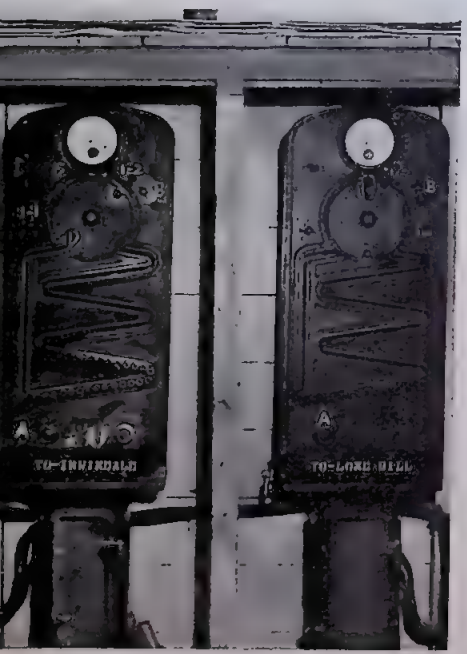
Oddly enough, train operations on this branch of SP had for some time been supervised by a PE train dispatcher. Train control is by an ancient staff system. There are five pairs of these strange-looking machines. Only train conductors are permitted to operate staff boxes and no train may be run over the protected track without a staff, which supersedes even train orders. A close view of one of these machines reveals a large metal box, on the face of which is a long groove containing from 15 to 30 steel pins five inches long. These are the staffs. Before a train enters a staff operated section, the conductor works a pin up through the groove to the top of the box. If the block is unoccupied, the pin may then be released by turning a dial. This locks the machine and also the one at the other end of the protected section, neither of which can be operated until the staff is restored. Upon arriving at the end of the block, the "Skipper" inserts the pin, or staff, and the machines are again operable.

The staff system protects single-track stretches between sidings from Baldwin Park, Irwindale, Covina, Lone Hill, where the PE rails come back into this line, then on track used by both SP and PE to San Dimas. It ends at La Verne where the SP turns toward Pomona. From La Verne to San Ber-



Frank J. Peterson.

At Baldwin Park trains leave the PE main line and the trolley is soon pulled down while by-passing the city streets of Covina by running on SP track. Right, same train pulls into Covina. In this section and on to La Verne where PE and SP use the same trackage, the staff system is in use. This requires a stop at five places to operate the staff machines, left, below. Covina machines are shown.



Frank J. Peterson.

nardino trains are operated by the usual train-order system.

I am a freight conductor on the PE, and with the help of my good friend, Frank Peterson, will try to tell the story of a round trip between Los Angeles and San Bernardino on this very busy line.

When we arrive at State Street yards in Los Angeles at 3 p.m. we find steam locomotive No. 1740, a SP 2-6-0, and a steeple-cab electric locomotive, PE No. 1626, ready to get on the train which has a consist of 72 empty tank cars to highball east.

Sam Levin, engineer, and Bill Lundun, fireman, will be on the steam loco, and L. L. Young, engineer, and W. Hays will be on the electric motor. Our train crew will be G. K. Osman, conductor; W. E. Voorhis and Arthur Gouty, head and swing brakemen, and H. G. Bracken, rear man.

The engines are coupled on, the

brakeman make an inspection, and we are ready to go. We will leave State Street and run over a double-track, block-protected line to Baldwin Park. We find we must wait for a passenger train to get by. It clears State Street at 3:36 p.m.

Sam whistles off, and after a highball from the rear end, we start out. We have a heavy grade out of the yard for about three miles, so the yard engine will help us part of the way. The two locomotives strain and struggle until we get to Wilmar, almost 10 miles; then the road levels out.

At milepost 12.30 we come to a single-track bridge over the San Gabriel River, and pull into El Monte, where the PE line crosses the SP's main line east. The board is red, so we wait and watch a big SP cab in front fight the hill east with 126 cars. Then we finally get the clear board and start again. At milepost 15, the block on the single-track bridge over the Lexington Wash is red, so we wait while an extra headed by SP No. 3101, a 4-6-2, SP No. 2298, a 4-6-0, and electric locomotive No. 1625 roar by us with 80 cars of oil. We get a clear board, and arrive in Baldwin Park at 4:30 p.m.

Between Baldwin Park and the other side of Covina we pull down the trolleys and run over SP tracks.

Compared to a passenger run, which may seem slow enough to the passengers at times, a freight run has many more delays. In the next few miles we travel through

Frank J. Peterson.

Frank J. Peterson.

the staff system territory, making good time between stations but with an almost unbelievable number of necessary stops.

First we wait to get a staff before we can leave Baldwin Park. . . . At Irwindale we couple on a helper, for with the trolley down we're really short one engine. . . . The helper is SP No. 2701, a 2-8-0. . . . At Covina, another staff. . . . Lone Hill, wait for Extra SP 1804 west double-headed with PE 1631.

We drop off the helper, take on water, then seesaw to let mail car No. 1467 go by at La Verne. Conductor Osman gets his train orders and gives copies to both crews and we're on our way again, rolling so close to the orange groves that it seems as though we could pick fruit from the caboose steps.

The PE and Santa Fe main lines run parallel for a number of miles, crossing each other just west of Claremont. Here we get a red board while a Santa Fe 3100 pulls through the crossing and into a siding to wait for the Super *Chief*. The streamliner thunders by at 7:10 before we get a green board.

At Alta Loma Hill, beyond Upland, the grade is too much for us, and the engines groan to a complete stop. Engineer Levin blows out his flag and the rest of the crew cuts 20 cars which they take on to the next siding. When they come back we couple up, call in the flagman and proceed to reassemble our train at the summit.

Now we are traveling through some of the world's largest grape vinyards. We pass several more trains but they are all in the hole for us so we gain a little speed. At 11 p.m. we drop down to San Bernardino, cross over the Union Pacific-Santa Fe main line on a bridge, and enter the yards at the end of our run. Here two electric multiple-unit jobs wheel the cars on to Colton.

Early morning highball out of the Covina sidings on Extra 1740 East. This picture was taken a few minutes after the one above, at the same place.

Frank J. Peterson.

The return trip is made with 50 loaded tank cars. At 11:45 we pull out with our same two locomotives on the head end and two pushers, electric No. 1619 and Diesel No. 1654, at the rear of the train. This gives us three kinds of power and four engines on a 50-car train.

Things go fairly well for the first couple of hours, but at Alta Loma our train makes a meet with an express car. The last 35 of our cars are hanging down over a hill and in trying to start we pull out a drawbar. We chain the car and set it off at the nearest siding.

Wilmar Hill is the last big hump and we climb it by gathering speed and making a run for it. By 6:30 a.m., after 15 hours and 30 minutes of work we are really a tired crew and glad to get to State Street.

Frank J. Peterson.

Left opposite, waiting for staff is common experience to trains on SP section. Above, rolling through orange groves toward La Verne, and below, near Claremont. On the San Bernardino main line part of the system 1600 volts is used at the trolley, most other lines are operated at street railroad voltages. This and the well constructed catenary are evidence of the progressive days when PE, the world's largest electric railroad, planned long high-speed extensions.

William Barham, 1525 S. New Hampshire Ave., Los Angeles, Calif.

Who Stole My Golden Arm?

The Northwestern Pacific Railroad owns a tunnel which possesses the singular feature of having been cut beneath an old cemetery.

Foreman of construction at the time Tunnel No. 5 was built was E. H. Pagels, later Bridge and Building Supervisor on the Northwestern Pacific. His crew included a gang of Austrians, and a ventriloquist. The ventriloquist practiced his art during the progress of the work, it is said, causing a low voice to reverberate through the darkness saying, "Turn me over . . . turn me over." It wasn't long before the Austrians became panic-stricken and were completely unnerved; they eventually refused to continue work. It took all of Mr. Pagels' persuasive power to persuade them that it would be safe to continue, and eventually the tunnel was finished.

The occupants of the cemetery probably expected to be six feet under; it is doubtful if they ever expected to be fifty feet above—a railroad, at that.

Railroad Wolf

This item is not new, but it is funny: there is now a new genus of wolf—the Railroad Wolf. He is the wolf with a one-track mind and he whistles at every curve.

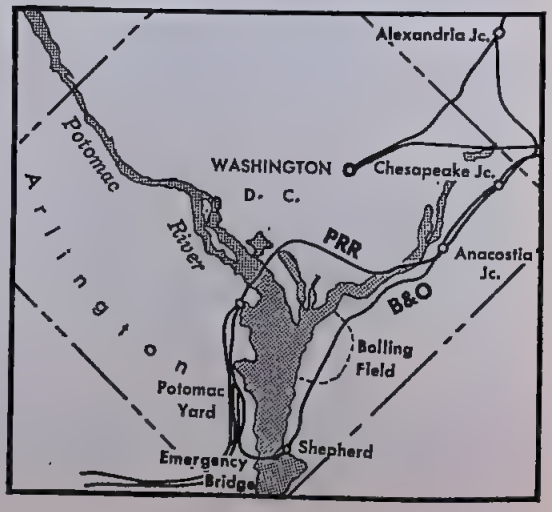
That's What I Like About the South

The ends of the Georgia Northern's main line terminate in two cities 68 miles apart named Boston, Ga., and Albany, Ga. This road might rightfully call itself the Boston & Albany if it so fancied. Another interesting fact about this small road is its Diesel train which it operates jointly with the 36-mile Albany & Northern. At Albany the train continues on A&N track to Cordele, Ga.

Now It Can Be Told

When the United States entered the war, the vital bottleneck where the PRR Long Bridge crosses the Potomac River caused great concern in Washington. This was the only practical rail connection with the northeastern states and Potomac Yard, as well as the southern seaboard. So the army brought in parts of an old bridge and erected it across the Potomac River about six miles south of Washington, opposite Potomac Yard. The B&O extended its nearly obsolete Shepherd spur line to the bridge; and on the Virginia side, connection was made with Potomac Yard. Thus a new rail route was created. Because the line still could not handle big troop trains or heavy essential war freight, the B&O (with government help) rebuilt and modernized its line, using 100 and 130-pound rail, rock ballast, and color-position automatic signaling. The rejuvenated line was unique, for its route took it across the heavily-guarded Bolling Field. Special signals were installed to halt trains when aircraft were taking off and landing, and army guards rode all trains while they traveled over the airfield. While most B&O trains continued to use PRR tracks between Anacostia Junction and Potomac Yard, one freight a day was required to operate over the "Emergency Bridge."

At Alexandria Junction, where the branch joins the main line, there was no way to turn toward Washington or the West without extensive run-arounds. Again the army stepped in and a first-class wye was built. Now that the emergency is over, the bridge is down.—*E. L. Thompson.*



Start your vacation with *Relaxation...*

The perfect way to begin—and end—a vacation is a short period of complete rest . . . an opportunity to relax and sleep soundly while the miles slip away . . . to dine leisurely . . . to have space in which to move around. Your journey by rail is in itself a vacation.

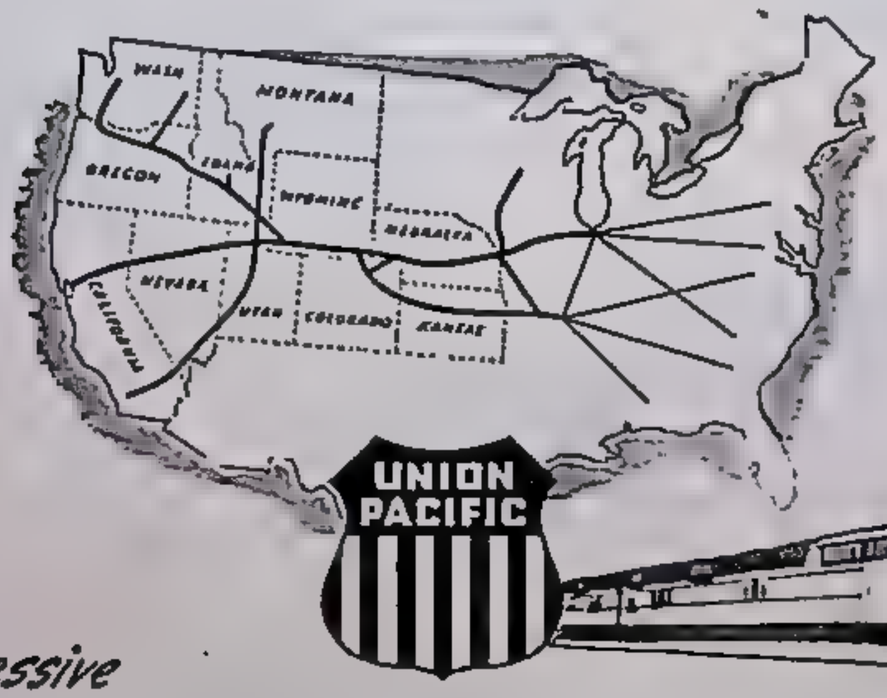
That's why so many people welcome the return of normal, peacetime travel. They are planning a vacation trip—by train.

Union Pacific offers a variety of passenger service to and from the West Coast; Streamliners, Limiteds, and the famous Challenger service, featuring comfort at low cost.

Your journey by rail will be the high spot of your vacation or business trip.

Union Pacific serves more western scenic regions than any other railroad—the world's greatest vacation travel bargain.

Among these regions are Colorado, Yellowstone, the National Parks of Utah-Arizona, California and the Pacific Northwest.



Start your vacation with relaxation—

be Specific—
say "Union Pacific"

The Progressive

UNION PACIFIC RAILROAD

ROAD OF THE *Streamliners* AND THE *Challengers*

What does it cost to run a Railroad?

THE cost of running a railroad—a *real* one—is made up of a thousand and one things. Wages, fuel, taxes, replacement of worn-out materials, maintenance of rolling stock, track and right of way, are only a few of the *many* items which have *increased in cost* since 1939, making it over 25% more expensive to run a railroad like the Erie.

But while these costs have gone *up*, freight charges have gone *down*, until today they average less than 1¢ for moving a ton of freight one mile.

This means that the freight charges on the products you buy are one of the few things that have not increased in price—in fact, the average cost per ton mile to shippers today is 2½% lower than in 1939, and 25% lower than in 1921.

—All because progressive private management wisely reinvested earnings in better tools and equipment for skilled railroad workers to use in providing America with the *finest* transportation at the *lowest* possible cost.

Erie Railroad

Serving the Heart of Industrial America

ERIE

The flanged wheel on the steel rail

Carries the output of farm, factory, and mine—at an average charge no higher now than before the war

● Remember this picture of the wheel and the rail . . . the unique combination which makes it possible for railroads to run trains of cars . . . the only means of transportation with the capacity to meet America's major needs . . . in peace as well as in war.

Flanged wheels on steel rails, plus a vast volume of traffic, made it possible for railroads—despite steep increases in wages and costs in the past five years—to haul freight at charges which generally are no higher now than before the war. It still costs, on an average, less than one cent for hauling a ton of freight a mile.

Railroad charges depend upon both operating costs and traffic volume—but whatever changes the future may bring, the flanged wheel on the steel rail will still be America's basic reliance for dependable transportation at the lowest possible charge.

AMERICAN RAILROADS

RUNNING EXTRA

This charming person is Faye Cyzmoure, one-fourth blond, one-fourth pretty, one-fourth efficient, one-fourth Norwegian, one-fourth secretary to TRAINS staff and three-fourths secretary to the staff of THE MODEL RAILROADER (we left out, come forth, said Daniel). Cyzmoure is not pronounced as it looks. Rather, it is pronounced as Faye looks: SIZZ-MORE-AY.

Ah, life, life! On this beautiful spring day (remember, this is being written late in March for the May issue), this column can think of no better task to tisk about than writing about Faye. Her husband is a nice feller. Name of Joe—all Joes are nice fellers. He's just out of the army, which makes Faye happy, which also makes this column happy.

When Faye smiles, as you see her doing, all the world becomes a lovely place to be in, especially if you happen to be on the staff of TRAINS or THE MODEL RAILROADER. The cockles of your heart would be warmed if you were to meet Faye in person. She sort of drawls when she speaks and since she has a soft voice her conversation resembles the sound of summer breezes wafting slowly across a field of Kentuck maize.

Seriously, like all good secretaries, Faye puts out a tremendous amount of work each week. She has acquired a knowledge of railroad terminology enabling her to answer hundreds of letters.

In an organization whose product is words it is important that as much time as possible be spent in getting those words onto magazine pages. The less time given to other phases of magazine production, such as answering correspondence, the better the magazine, and that is where a gal like Faye can, and does, give the rest of the staff a valuable lift.

Railroad

Hot

Your editorial of December urging readers to let Washington know how we feel about the railroads' raw deal, was indeed proper. Let's have one every month, and tell how Greyhound is slower than many 1926 interurbans. Give the readers more of those good solid facts.

E. L. Tennyson, West Orange, N. J.

Airlines vs. Railroads

The airlines began with the idea that pleasant relations with the traveling public were the sine qua non of getting people to fly. No matter where you fly, you are met by people who are obviously friendly, courteous and helpful. Nor are you faced at any point with avaricious palms. In spite of my interest in railroading, it must be admitted that only a small percentage of railroad employees show half the courtesy and friendliness that the airline folks do. When you get off the beaten path, and I have in mind the D&RGW narrow gauge lines, the Suncook Valley, etc., "you are folks" so to speak, and the crew treats you as though you were at least on a par with themselves. When you get on a high-iron passenger job, you are just one of a herd. Perhaps if I had to greet the public as the crew of a crack varnish job does, I'd get sour too. But the point is that as airlines become better able to carry more people at lower rates, they are going to do just that, and the rails might well get busy training their employees, beginning with the traditionally bored ticket sellers, to handle the public diplomatically and with less frigidity.

Morris W. Abbott, 23 Bedford Ave., Milford, Conn.

Railroads vs. Airlines

I'm tired of hearing the comment that railroads are behind the times and will have to go a lot to beat air travel. There are some ways in which a few railroads are way behind the times, but not the lines most people travel on. Perhaps the chronic complainers need their minds refreshed a bit. Remember back in the early '30's when air conditioning was being introduced? Chances are the first time you experienced a properly air-conditioned room, you were riding on a train. Now, except for short suburban runs, air conditioning is becoming the rule on more and more railroad trains. What's more it's better air conditioning then we used to have. Try to touch that with your private auto or bus. And the railroads operate these expensive units at no extra cost to the passenger. Then there is the smooth ride. Modern coaches on most lines ride more smoothly than any other form of transportation. No dips or sudden turns, no nauseating air pockets. And how about the cost of the ride? True, some rates on trips like Washington-Chicago are actually cheaper by air than present rail fares. But the cost of taking a passenger between such points is actually far greater by plane. It all comes to the point that terminal costs are the biggest expense in any form of transportation. The fact is airline terminal costs are paid by you in the form of taxes whether you use planes or not. This makes a plane trip more costly in the final analysis. After airlines are well established, as the railroads have been for nearly a hundred years, our cities will inevitably try to find a means of throwing terminal costs directly at the airlines. The added cost will be then shifted from you as a taxpayer to the airline passenger where it ought to be. Hold on, railroads, until our Chambers of Commerce and politicians

Mail

feel they've got airlines for good and their forces won't weigh so heavily against you. But back to the subject of progressive railroads. Today railroads are pioneering in many things: Vista-dome cars that far surpass the visibility of the old-fashion observation platform and without the grime; safety devices that make you far safer at 80 or 90 miles an hour in a railroad coach than you are walking through your own home. Safer by far than any other form of travel— seats developed and used by railroads for passenger comfort are being copied by furniture manufacturers for home and office use, they're about to revolutionize an industry. I could go on and on. Before I close I should like to point out at least two of the busy railroads which serve New York City are a bit behind most other railroads in the country in bringing new comforts to the passenger. This is most unfortunate, for it is in New York that much of our editorial opinion takes form. The New York editor, writer, reporter or researcher is very likely to judge the railroads of our country by those he sees around him. So railroads have an unjustified bad name in many newspaper columns and magazine pages. If these roads continue to order new equipment as they are now doing, and are bold enough to send some of their still usable but old-fashion cars to foreign countries that have practically none at all, the railroad industry should begin to look much better, to look its real self. And if these offending railroad companies have anything like the comeback that the Milwaukee Road's *Hiawathas*, the Southern Pacific's *Daylights*, and other users of supertrains have had, their increased revenue will soon pay off on all the new equipment they can order.

Richard Arnold Weston, Kansas City, Mo.

In the Far East

Have just finished reading the current issue of TRAINS and want to say that it contained a great deal of special interest to me. I especially enjoyed the excellent photo on page 30 of the USA Mikado No. 869. I have spent many hours on the throttles of the little Mikes, from last April to the present date, in the capacity of locomotive engineer on the Luzon Military Railroad (Manila Railroad). However, in regard to Sergeant F. R. Smith's letter concerning the Manila Railroad, I'm sure that he must have been misinformed on some points. He spoke of the 106 locomotives in service prior to 1914 being 0-6-0 and 0-8-0 types. I don't think any road of this size had a greater variety of power. The pre-1921 power that I've seen and photographed includes 0-6-0 T, 0-8-0 T, 0-6-2 T, 4-6-4 T, 2-4-2 T, 4-4-2, 4-6-0, 2-8-0, and some Kitson Meyer articulateds. All of these old locomotives that I have seen were British built, mostly by the North British Locomotive Company and some by Leeds. Just one more line to compliment your staff on the fine job it does on TRAINS each month, and to wish you greater success in the future.

T/4 Hugo Lackman, 749th Ry. Opn. Bn., c/o P.M. San Francisco

Railroads in Technicolor

Does the Santa Fe have any lightweight passenger equipment in two tones of green, as in the technicolor picture "Leave Her To Heaven"? Such color scheme is not listed in the Santa Fe color chart in THE MODEL RAILROADER for April, 1944.

Howard Gruenberger, Milwaukee, Wis.

[When color is used on the Santa Fe's Diesels, it is red, yellow and black; on the freight Diesels blue and cream. Santa Fe does not use shades of green.—*Ed.*]

SECOND SECTION

We have received some strange communications in our daily mail, but certainly none like this. An order arrived from Ireland for various books on railroading and model railroading subjects which was all perfectly orthodox except for the last item. Here, in perfect seriousness, was a request for Kathleen Windsor's *Forever Amber*.

On the same day a letter arrived with a sad tale about the correspondent's friend, a railfan from Eau Claire, Wis. It seems the friend had purchased a copy of TRAINS Album *Midwestern Railroads*, for his son. When he discovered he liked it as well as did his son, he told his local news agent to order the entire series. When they arrived the agent admired them so much that he took all 13 albums home to show his own son. Then came a long struggle to get them back to the store, but not for the customer. The agent himself has taken such a shine to the series that he keeps them locked up in his store safe. That's the understandable sort of reception we like to have our albums receive.

* * *

Are you Mr. Syracuse, or Mr. Goshen? Perhaps you didn't know that in a magazine subscription list the name your parents gave you is only a detail. What is most important is that you are listed under Syracuse or Goshen, Boston or Salem, Seattle or Los Angeles. In mailing, your magazine will go to your city and your street address but only the local postman will look at your name on the envelope. We know it's a bit insulting but first things come first in the mail. If you move and don't notify us giving both your old town, zone number, and street address and the new one, weeks—sometimes even months—will be lost before the tangle can be straightened out.

* * *

The Railroad Society of Milwaukee, a newly organized group of several dozen members, was called upon in April to build an exhibit for the Milwaukee Sentinel Sports Show. Since the Society caters to those interested in every phase of railroading it had much to choose from but was short on time. However, in less than three weeks, it set up a huge L-shaped model railroad, completely sceniced on one end, had three operating railroads in HO and O gauge, a railroad photo exhibit of 30 excellent railroad pictures and ran sound movies of railroads in various sections of the country. It is estimated that during the nine day showing more than 80,000 people from all over the midwest visited the exhibit and of one thing there can be no doubt. Railroading is a fascinating thing. One of the most common remarks, heard repeated hundreds of times was, "There may be a lot of different ways to travel but I'll still take a train."

KALMBACH PUBLISHING CO.
1027 N. 7th St. Milwaukee 3, Wis.

GEE! I BET IT CAN GO!

Right you are, kiddies!

It can go and does go, in fast daily freight service on The Minneapolis & St. Louis Railway.

New Diesel locomotives like this are hauling long freight trains every day on the M. & St. L. main line, between Minneapolis and

THE PEORIA GATEWAY

Soon, another Giant of the Rails will be operating in this new and finer through service, which saves precious hours

For Agriculture

For Industry

For Connecting Railroads

On shipments of freight to and from points throughout

The Great Midwest

THE MINNEAPOLIS & ST. LOUIS RAILWAY CO. THE PEORIA GATEWAY

The **MINNEAPOLIS & ST. LOUIS** *Railway*

GENERAL OFFICE, NORTHWESTERN BANK BUILDING, MINNEAPOLIS 2, MINN.

Full many a flower...

It's only human to put your best foot forward. For years we've enthused about the beautiful scenery we serve—seven national parks, rugged mountains, lovely lakes and rivers, Pacific Ocean shore, etc. In fact if any other railroad can top our scenery we'd like to know about it.

But it's only fair to admit that there are a few stretches of country along our tracks which, to paraphrase Gray's *Elegy*, "were born to blush unseen." We can't mention them by name because the chambers of commerce in these barren spots are just as proud as any others, and we don't want to offend them.

Luckily, many of our trains pass through these scenic vacuums at night. The dawn of a new day generally finds you winding through the mountains again, skimming along beside a beautiful lake or river, or rolling past the colorful forms and shapes of the desert.

So there you have it — the whole truth, and we feel better for the telling of it.

If you want to see twice as much of the West on your trip to California—bare spots and all—we suggest you follow our time honored advice and "go one way, return another" on our Four Scenic Routes.

Our service this summer will be much faster and better than in "normal" pre-war times. If you are planning a trip West, just drop us a line and we'll be glad to help you.

The little map shows where we go.

S·P *The friendly Southern Pacific*

J. H. Desherow, Passenger Traffic Mgr., 535 Fifth Ave., New York 17, New York
O. P. Bartlett, Passenger Traffic Mgr., 310 S. Michigan Ave., Chicago 4, Illinois

ABANDONED!

NEVADA COUNTY NARROW GAUGE RAILROAD

A WAR CASUALTY!

A brief history of this tiny pike, complete with map and photos, may be yours for the asking now! All contained in the new spring issue of —

RAILROADIANA VIGNETTES

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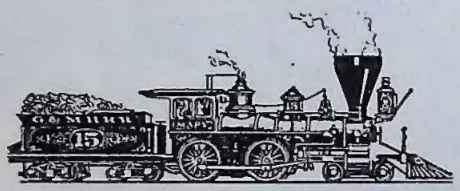

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Craftsmanship and Engineering, Integrity of standards maintained in every step of manufacture, make Mantua model railroad equipment the best in "HO" —it builds great **"lines"**. Ask your hobby dealer for Mantua!

Write for our booklet on miniature railroading and our pre-war catalog—25c.

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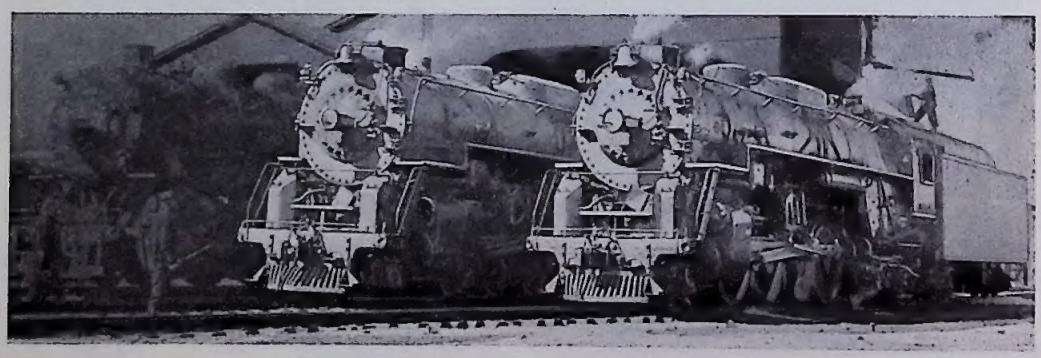


WITH STEAM UP FOR A BIG DAY'S JOB

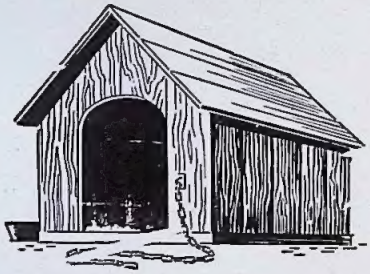
These Lima-built 2-8-4's of the Pere Marquette are constructed to provide the capacity necessary to speed heavy freights on the fast schedules that modern industry requires.

To meet today's demands for prompt deliveries, the Pere Marquette now operates a fleet of twenty-seven of these powerful steam locomotives.

LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

In plain English:

Doghouse=



In railroad slang:

Doghouse=

In any language:

A Great Railroad!=

FRISCO LINES

ST. LOUIS-SAN FRANCISCO RY.

Millions being spent to make Frisco even greater . . . to bring you Diesel-powered Meteor "Flash" and Texas Special . . . streamlined trains with unheard-of luxury, comfort and convenience. Still faster Frisco Faster Freight! Watch Frisco for the finest in up-to-the-minute, dependable passenger and freight transportation!

GREAT THINGS ARE HAPPENING ON THE FRISCO

"Welcome Back to Glacier Park!"

"That grin I'm wearing has been a long, long time busting through my whiskers, but blow my horns if I haven't something to grin about!

"They're opening the hotels and chalets in Glacier National Park this summer for folks who've craved for an eyeful of the most eye-filling country in the U.S.A. Come out this summer for a real Western vacation."

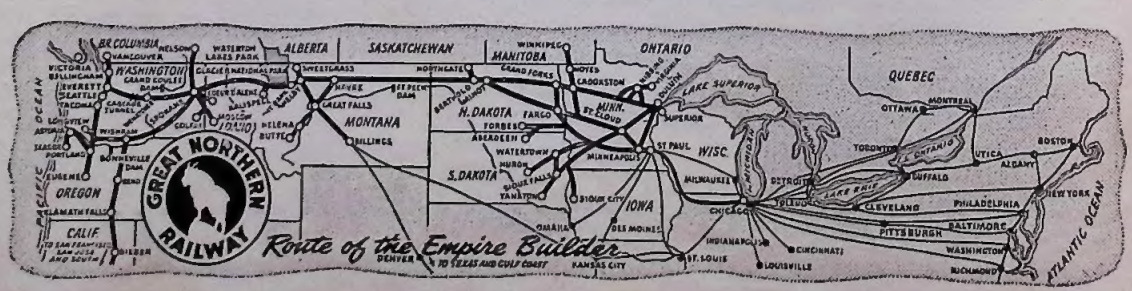
• • •

June 15 is the most important date on America's first postwar vacation calendar. It's the opening day of the 1946 summer vacation season in Glacier National Park on the route of Great Northern's transcontinental Empire Builder.

Up in northwestern Montana, where the American and Canadian Rockies shake hands, Glorious Glacier is the place for the most refreshing vacation of your life—the one you've been wanting and needing.

• • •

A letter or postcard to A. J. Dickinson, Passenger Traffic Manager, Great Northern Railway, St. Paul 1, Minn., will bring you complete descriptive material on summer vacation or stop-off tours in Glacier National Park.

GREAT NORTHERN RAILWAY

BETWEEN GREAT LAKES AND PACIFIC